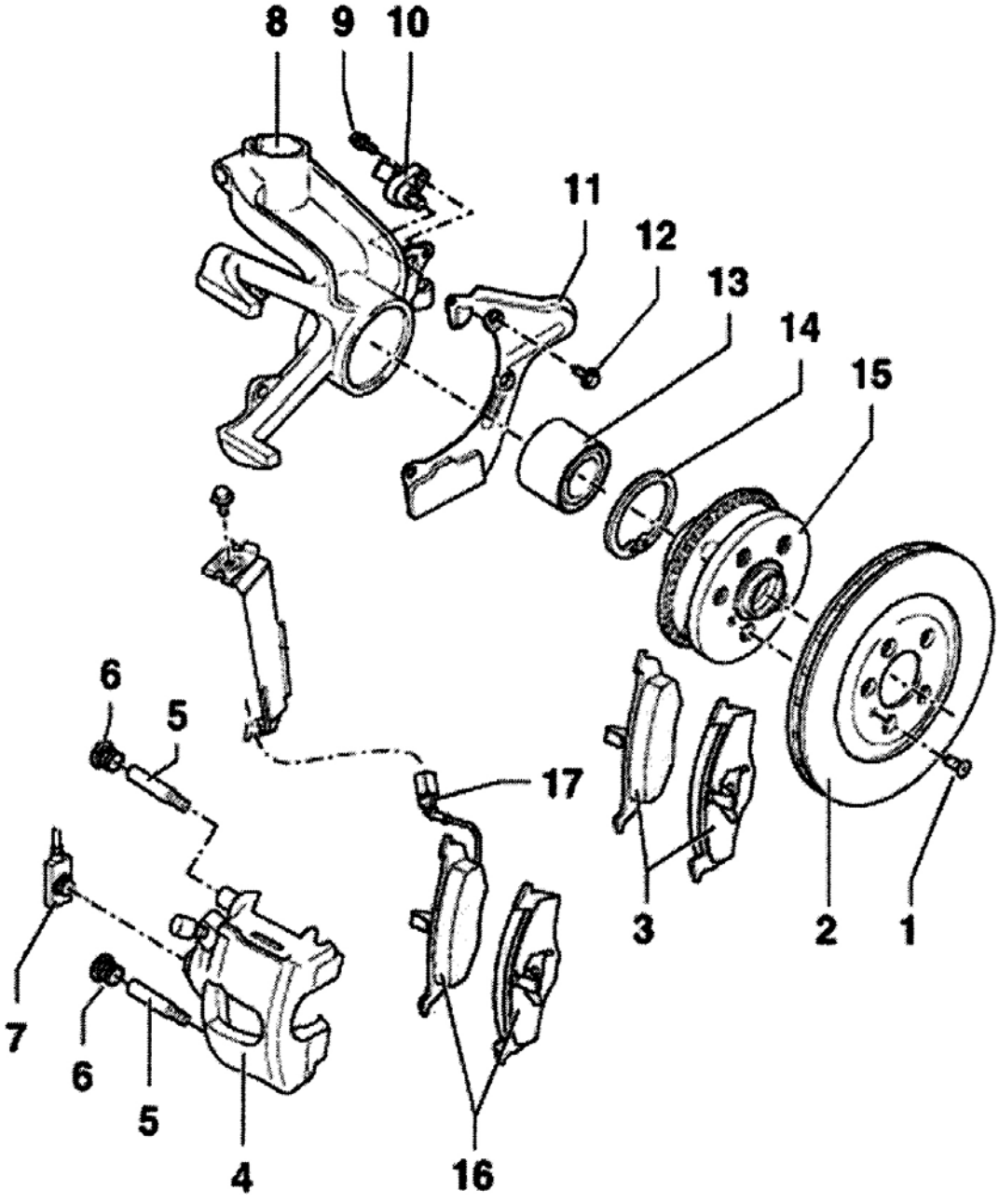
MODEL IDENTIFICATION

New Beetle is equipped with one of two brake systems on the front of the vehicle. To identify brake system installed on a particular model, see **BRAKE SYSTEM IDENTIFICATION** table. For visual identification, see **Fig. 1** -**Fig. 3** .

BRAKE SYSTEM IDENTIFICATION (NEW BEETLE)

Engine Size	Brake System	Axle
1.8L	FN3	Front
1.9L & 2.0L	FS III	Front
1.8L, 1.9L & 2.0L	C38	Rear



1. Disc Retaining Screw
2. Vented Disc
3. Brake Pads
4. Brake Caliper (FS III)
5. Guide Pins
6. Guide Pin Protective Caps
7. Brake Hose
8. Wheel Bearing Housing
9. Wheel Speed Sensor Retaining Screw
10. Wheel Speed Sensor
11. Splash Shield
12. Splash Shield Retaining Bolt
13. Wheel Bearing
14. Wheel Bearing Snap Ring
15. Wheel Hub
16. Brake Pads W/Pad Sensors
17. Pad Senor Harness Connector

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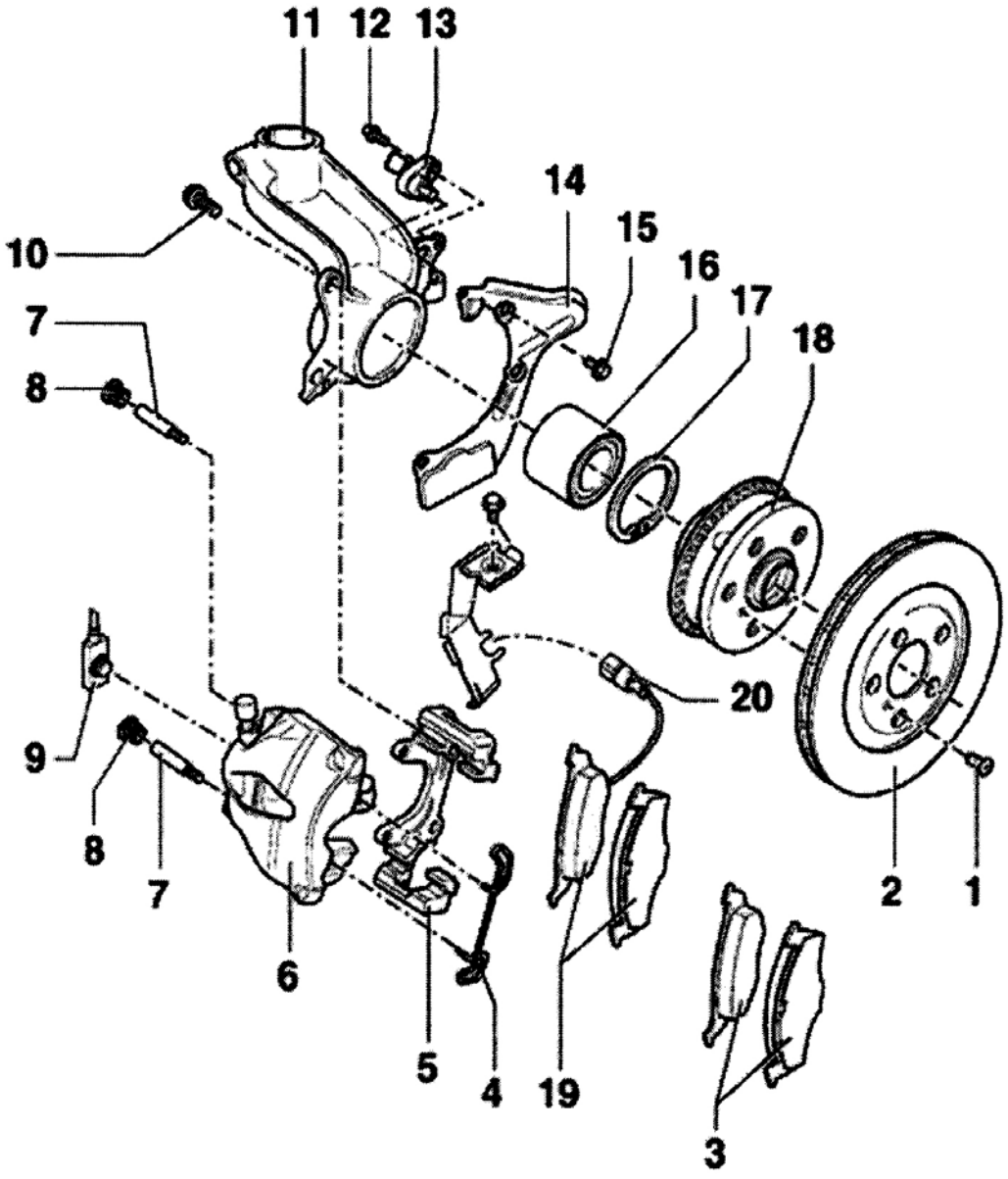
Fig. 1: Exploded View Of Front FS III Brake Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.



1. Disc Retaining Screw
2. Vented Disc
3. Brake Pads
4. Anti-Rattle Spring
5. Brake Pad Carrier
6. Brake Caliper (FN3)
7. Guide Pin
8. Guide Pin Protective Cap
9. Brake Line
10. Caliper-To-Wheel Bearing Housing Bolts
11. Wheel Bearing Housing
12. Wheel Speed Sensor Retaining Screw
13. Wheel Speed Sensor
14. Splash Shield
15. Splash Shield Retaining Bolt
16. Wheel Bearing
17. Wheel Bearing Snap Ring
18. Wheel Hub
19. Brake Pads W/Pad Sensors
20. Pad Senor Harness Connector

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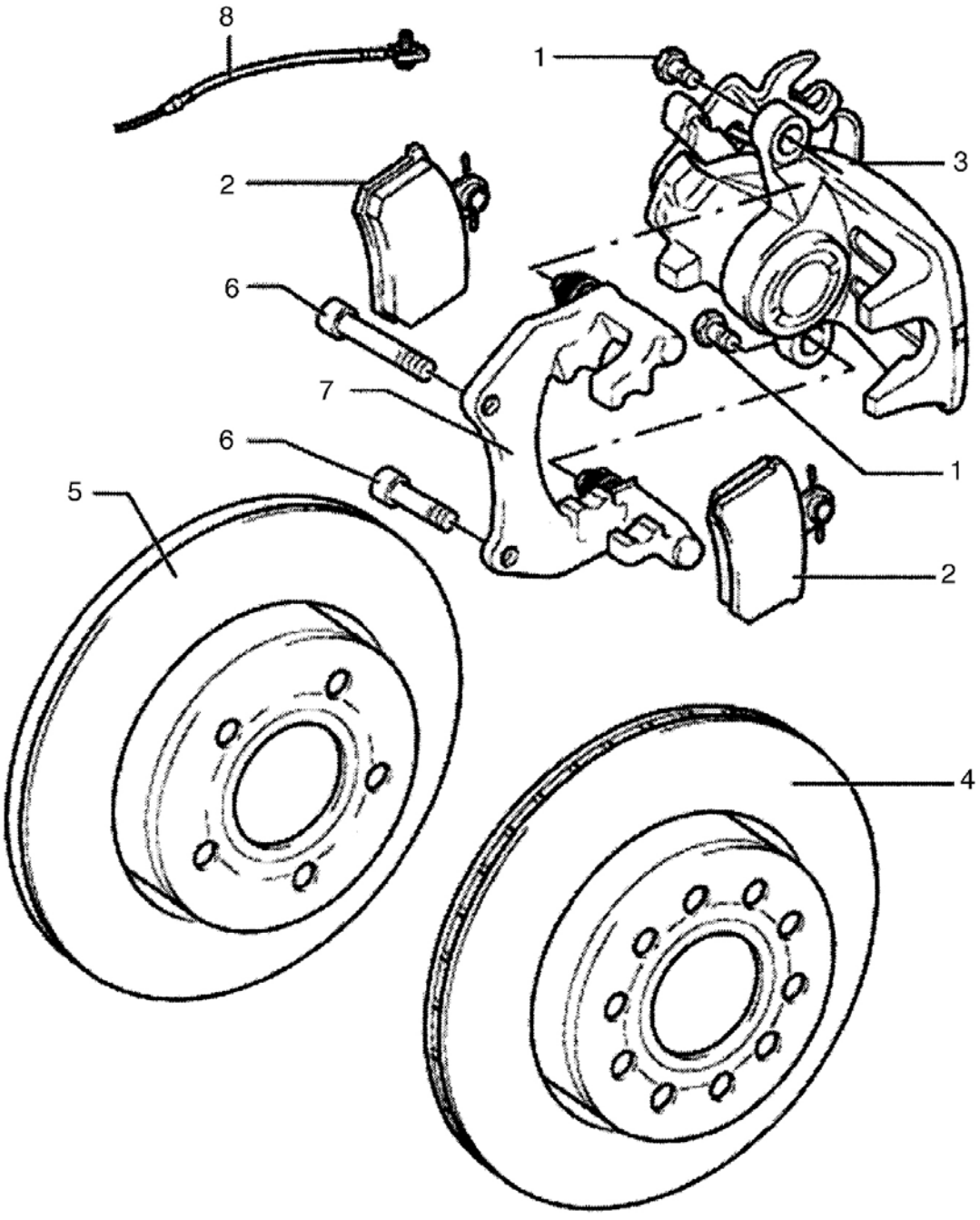
Fig. 2: Exploded View Of Front FN3 Brake Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.



1. Brake Caliper Retaining Bolts (Always Replace)
2. Brake Pads
3. Self-Adjusting Rear Brake Caliper
4. Vented Brake Disc
5. Solid Brake Disc
6. Caliper-To-Wheel Bearing Housing Bolts
7. Brake Caliper Carrier
8. Brake Line (Flexible)

Fig. 3: Exploded View Of Rear C38 Brake Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

ABS IDENTIFICATION

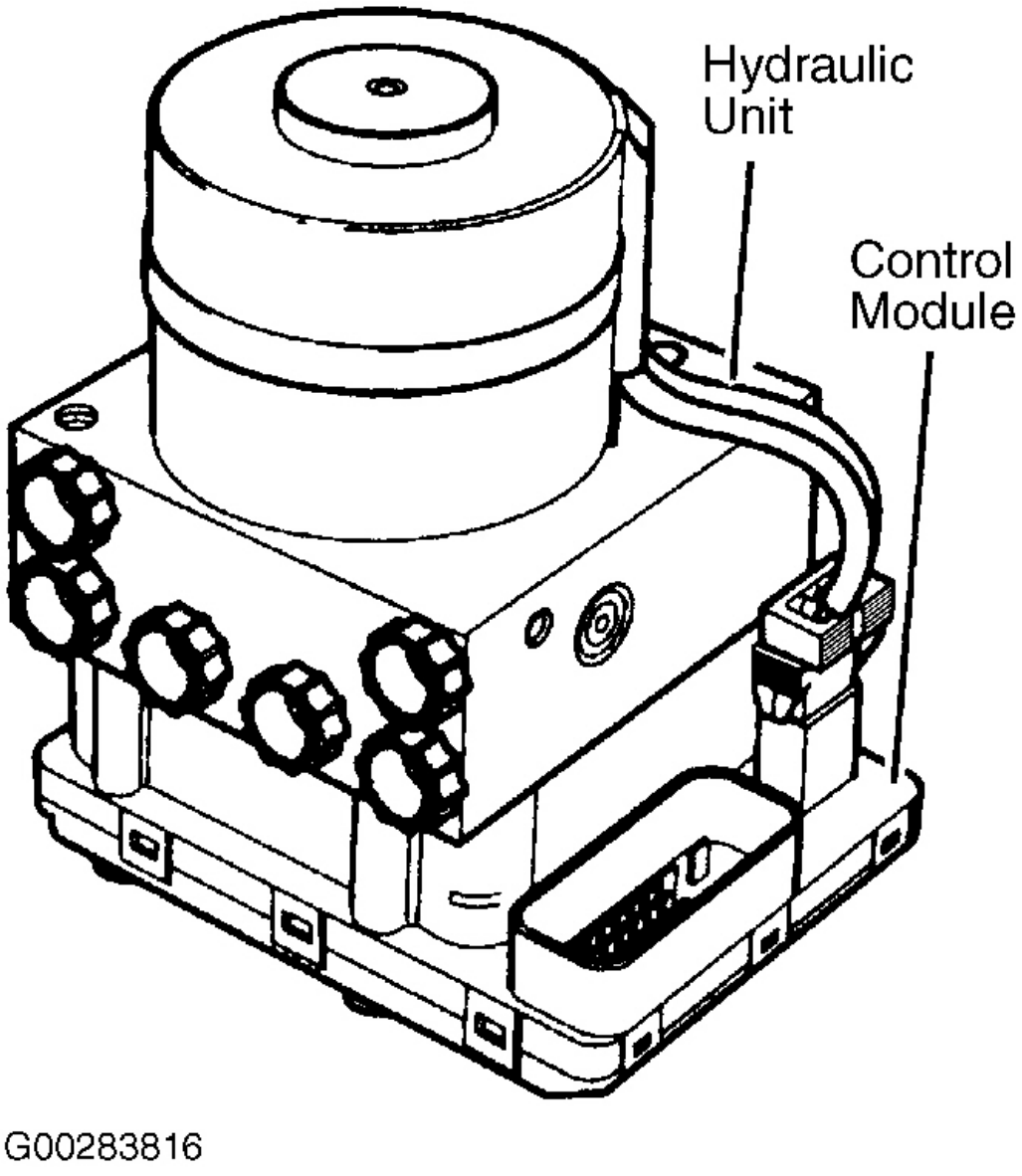


Fig. 4: Identifying ITT Mark 20 IE ABS
Courtesy of VOLKSWAGEN UNITED STATES, INC.

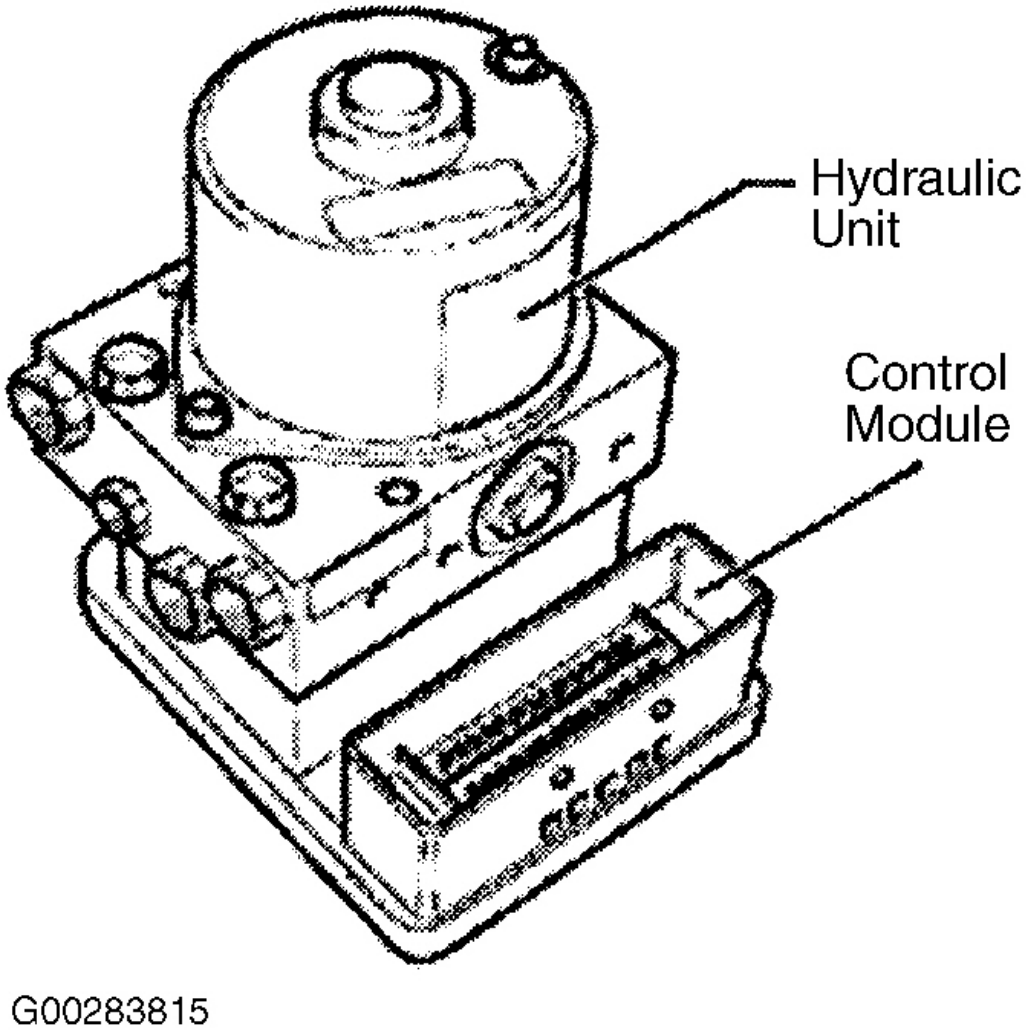


Fig. 5: Identifying ITT Mark 60 ABS
Courtesy of VOLKSWAGEN UNITED STATES, INC.

DESCRIPTION & OPERATION

All models are equipped with front and rear disc brakes. Parking brake acts on rear brakes and is cable-actuated.

Hydraulic brake system uses a tandem master cylinder with vacuum assist. Hydraulic system is diagonally split. Left front and right rear wheels form one circuit. Right front and left rear wheels form the other circuit.

VACUUM PUMPS

Gasoline models with automatic transmissions may be equipped with an auxiliary electric vacuum pump. Vacuum pump supplies vacuum to brake booster ensuring adequate vacuum for proper vacuum assist. Vacuum pump is activated by a signal from ABS control module, and is located under master cylinder. Vacuum sensor located in vacuum line to brake booster sends signal to ABS control module indicating vacuum level.

On models equipped with diesel engines, a vacuum pump for brake booster is mounted to rear of cylinder head. Vacuum pump supplies vacuum to brake booster ensuring adequate vacuum for proper vacuum assist.

SWITCHES

Brakelight Switch

Two different styles of brake light switch were used in production. For servicing purposes they will be referred to here as "old style" and "new style". It is important to identify which style of switch is installed prior to servicing as each requires specific removal and installation/replacement procedures. On diesel and gasoline models with cruise control, Brake Switch "F" and Brake Pedal Switch (cruise control/DFI) "F47" are integrated. Only "old style" switches can be removed, then reinstalled and adjusted. "New style" switches must NOT be reused after removal, and must be replaced.

Brake Pressure Sensors

Brake Pressure Sensor 1 and Brake Pressure Sensor 2 located on brake master cylinder send brake pressure information to ABS control module.

BRAKE ASSIST

Vehicles manufactured from 02/2002 are equipped with brake assist. When brake pedal is depressed, mechanical brake assist is activated. Brake pedal can now be partially released and pressed again with less force. It is not possible to repair the brake assist, the complete brake booster must be replaced.

BLEEDING BRAKE SYSTEM

WARNING: Use only DOT 4 brake fluid from a sealed container. DO NOT mix brake fluid with any other type.

CAUTION: Brake fluid will damage painted surfaces. If brake fluid is spilled on painted surface, wipe it off immediately and clean with alcohol.

BLEEDING PROCEDURES

WARNING: Use only DOT 4 brake fluid from a sealed container. DO NOT mix brake fluid with any other type.

CAUTION: Brake fluid will damage painted surfaces. If brake fluid is spilled on

painted surface, wipe it off immediately and clean with soap and water.

NOTE: Brake fluid should be replaced every 2 years regardless of elapsed mileage.

Standard Procedure

1. To identify ABS application, see **ABS IDENTIFICATION** under IDENTIFICATION.
2. Ensure brake master cylinder reservoir is full. Connect hose to brake caliper bleed screw and insert other end of hose in a clear container 1/4 full of clean brake fluid. Bleed brake calipers in following sequence:

   Vehicles Equipped With Mark 20 ABS -

   - Right Rear Caliper
   - Left Rear Caliper
   - Right Front Caliper
   - Left Front Caliper

   Vehicles Equipped With Mark 60 ABS -

   - Left Front Caliper
   - Right Front Caliper
   - Left Rear Caliper
   - Right Rear Caliper
3. About 1/2 pt. (200 cc) of brake fluid is expelled from each wheel when bleeding entire system. Top off fluid level in reservoir to MAX mark and close reservoir cap. Before driving vehicle, depress brake pedal several times to ensure brakes are working correctly.

With Brake Filler & Bleeder Unit

NOTE: When using a brake system filling and bleeding appliance (such as VAS 5234) to replenish the brake fluid, make sure that filling pressure does not exceed 15 psi (1 bar). If the filling pressure exceeds 15 psi (1 bar), a hydraulically controlled change-over valve (which is required for the Electronic Differential Lock function) prevents unrestricted flushing of the EDL-related parts of the hydraulic unit. If this is the case, it may not be possible to bleed the system properly. For this reason the pressure must be reduced to 15 psi (1 bar) on the brake filler and bleeding unit.

1. To identify ABS application, see **ABS IDENTIFICATION** under IDENTIFICATION.
2. Connect pressure bleeder (VAS 5234) or equivalent, to master cylinder reservoir. Connect hose to brake caliper bleed screw and insert other end of hose in a clear container 1/4 full of clean brake fluid. Bleed air from brake system in following order:

   Vehicles Equipped With Mark 20 ABS -

- Right Rear Caliper
- Left Rear Caliper
- Right Front Caliper
- Left Front Caliper

Vehicles Equipped With Mark 60 ABS -

- Left Front Caliper
- Right Front Caliper
- Left Rear Caliper
- Right Rear Caliper

3. About 1/2 pt. (200 cc) of brake fluid is expelled from each wheel when bleeding entire system. Top off fluid level in reservoir to MAX mark and close reservoir cap. Before driving vehicle, depress brake pedal several times to ensure brakes are working correctly.

When Master Cylinder Reservoir Is Empty

NOTE: System must first be pre-bled when one chamber in the brake fluid reservoir is completely empty.

1. Bleed brake system as outlined in **WITH BRAKE FILLER & BLEEDER UNIT** . When brake fluid is free from air bubbles, go to next step.
2. **NOTE: For more information on connection and operation of VAS scan tool, see appropriate ANTI-LOCK - TEVES MK 20 (WITH TCS/EDL/ESP) or ANTI-LOCK - TEVES MK 60 (WITH TCS/EDL/ESP) article in BRAKES.**

   Turn ignition off. Connect VAS 5051 scan tool or equivalent to Data Link Connector (DLC). DLC is located under dash to left of steering wheel. See **Fig. 6** . From VEHICLE SELF-DIAGNOSTIC menu, select 03 - BRAKE ELECTRONICS. Press "Q" button to confirm input, and go to next step.
3. On scan tool, press "0" and "4" to select 04 - BASIC SETTING. Press "Q" button to confirm input. Press "0", "0" and "1" to enter DISPLAY GROUP 001. Press "Q" button to confirm input, and go to next step.
4. Press and hold brake pedal with substantial foot pressure. Pedal drops, hydraulic pump starts up, pedal returns. When scan tool displays RELEASE PEDAL; FR/FL BLEED SCREWS OPEN, release pedal, and open front bleeder screws. On scan tool, press UP button or "0", "0" and "2" to advance to Display Group 002, and go to next step.
5. Wait 10 seconds. Hydraulic pump should start up and run briefly. When scan tool displays PRESS PEDAL 10X; BLEED SCREWS CLOSED, press pedal 10 times, close front bleeder screws. On scan tool, press UP button or "0", "0" and "3" to advance to Display Group 003, and go to next step.
6. Press and hold brake pedal in position. Repeat bleeding procedure as specified in steps 4 and 5 for rear brakes. On scan tool, press UP button several times to advance to the next display groups until display group 17 is indicated, and go to next step.
7. When scan tool displays PARTIAL BLEEDING OVER, press BACK arrow button to exit diagnostic

function 04 - BASIC SETTING. From scan tool menu, select diagnostic function 06 - END OUTPUT. Press "Q" button to confirm input, and disconnect scan tool.

8. Bleed brakes using standard bleeding procedure. See **STANDARD PROCEDURE** .

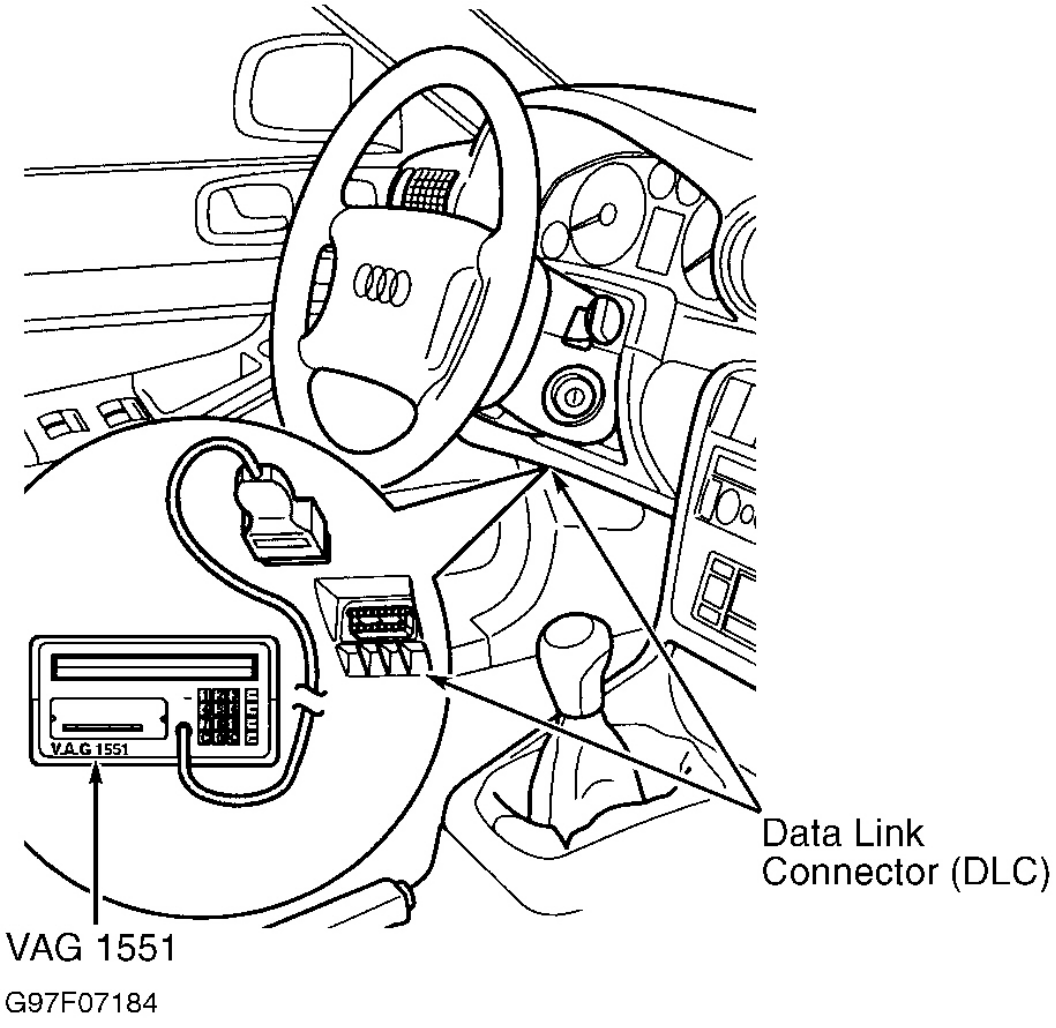


Fig. 6: Locating Data Link Connector
Courtesy of AUDI OF AMERICA, INC.

ADJUSTMENTS

BRAKE LIGHT SWITCH

NOTE: For brakelight switch adjustment, see BRAKELIGHT SWITCH under REMOVAL & INSTALLATION.

MASTER CYLINDER PUSH ROD

NOTE: Master cylinder push rod is not adjustable.

PARKING BRAKE

NOTE: Due to self-adjusting rear brakes, adjustment is normally only necessary after replacing parking brake cables, brake calipers, brake pads and/or brake discs, backing plate or brake linings.

1. Press brake pedal firmly 3 times. Operate parking brake lever 3 times. Disengage parking brake. Raise and support vehicle. Measure gap between stop and lever. See **Fig. 7** . Maximum clearance between parking brake lever (on caliper) and stop should be .059" (1.5 mm). If clearance is not as specified, go to next step.
2. Remove center console extension. See **CENTER CONSOLE** under REMOVAL & INSTALLATION.
3. Loosen locking nuts at parking brake lever. Tighten adjusting nuts until levers on calipers just move off stops. Apply and release parking brake. Ensure rear wheels rotate freely. Recheck adjustment, and adjust as necessary. Tighten lock nuts.

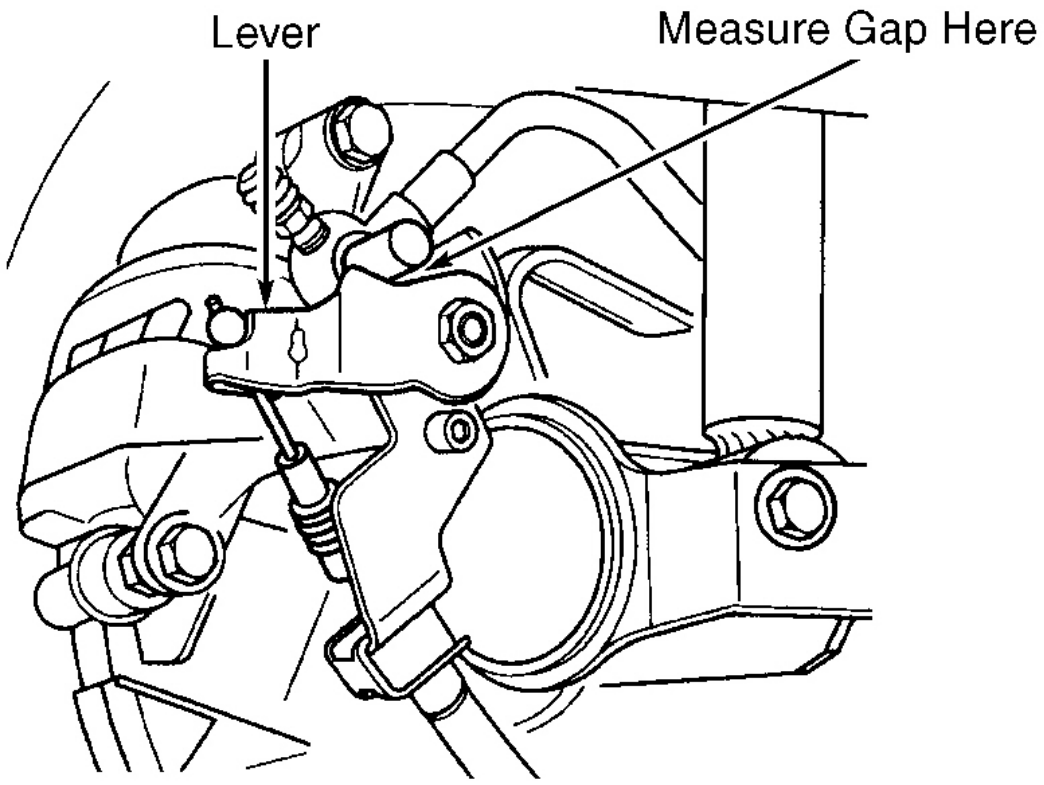


Fig. 7: Adjusting Parking Brake
Courtesy of VOLKSWAGEN UNITED STATES, INC.

WHEEL BEARINGS

Front and rear wheel bearings, also called hub or axle bearings, are sealed units. Bearings are not adjustable. For repair information on wheel bearings, see appropriate FRONT or REAR article in SUSPENSIONS.

TROUBLESHOOTING

BRAKE PAD WEAR INDICATOR

Brake pads that have reached the end of their service life are indicated on instrument cluster by the Brake Pad Wear Indicator. Indicator will go out when NEW brake pads with NEW brake pad wear sensors are installed on vehicle.

SYSTEM TESTING

BRAKE BOOSTER BRAKE ASSIST

Vehicles manufactured from 02/2002 are equipped with brake assist. To test brake assist, start engine and depress brake pedal to ensure full vacuum boost. When brake pedal is depressed, a "click" must be audible, activating mechanical brake assist. Brake pedal can now be partially released and pressed again with less force. It is not possible to repair the brake assist, complete brake booster must be replaced.

ELECTRIC VACUUM PUMP

Description & Function (ITT Mark 60 ABS)

The electric vacuum pump is only installed in vehicles equipped with automatic transmission. Pump is switched on by Engine Control Module (ECM) dependent on intake manifold pressure. Vacuum pump is On Board Diagnostic (OBD) capable. There are no provisions for servicing the electric vacuum pump. If a malfunction is detected the vacuum pump must be replaced. Vacuum pump is located lower left on the subframe. See **Fig. 8** .

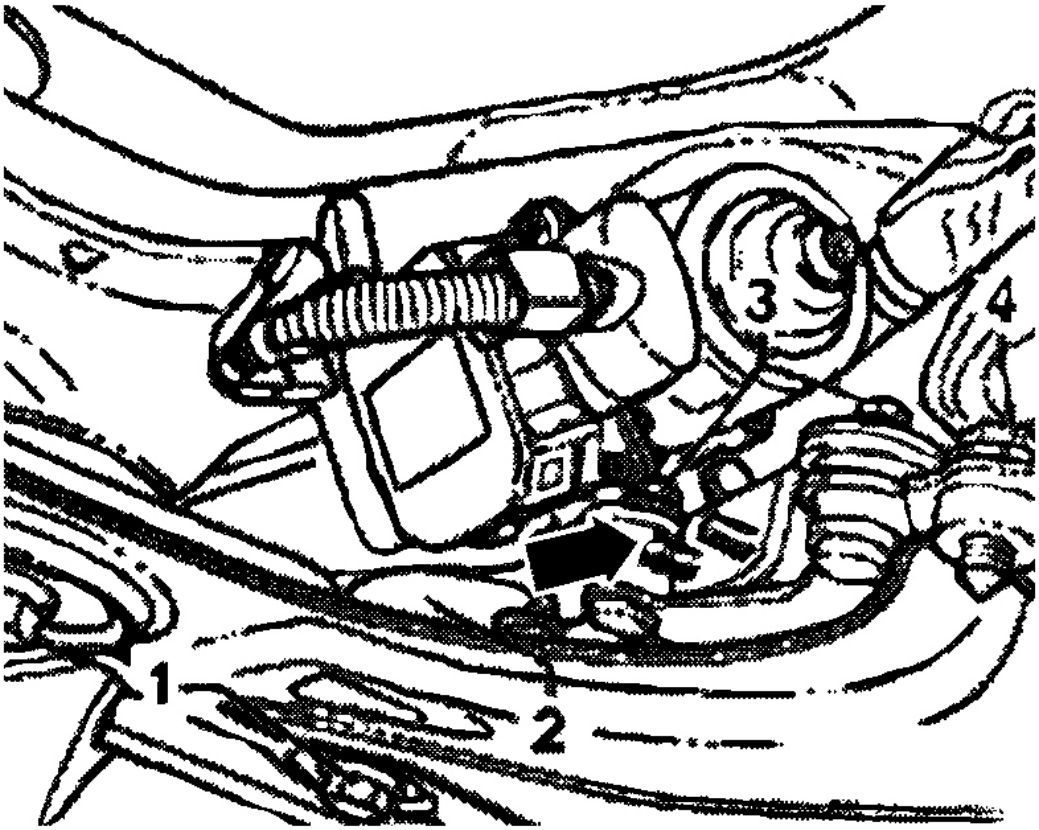


Fig. 8: Locating Electric Vacuum Pump (ITT Mark 60 ABS)

Courtesy of AUDI OF AMERICA, INC.

Testing (ITT Mark 60 ABS)

1. Drive vehicle onto lifting platform, turn engine off. Start engine. While the engine is being started the electric vacuum pump should run briefly. Electric vacuum pump is located on subframe in front of steering box, left side. Have an assistant touch the pump by hand to check whether it is running.
2. If electric vacuum pump does not run, check fault memory in the engine control module. See appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. If no DTCs were stored in memory, perform circuit testing of vacuum pump. See **CIRCUIT TESTING** .
3. If problem is found, repair as necessary. If no problem with wiring is found, replace electric vacuum pump. See **ELECTRIC VACUUM PUMP** under REMOVAL & INSTALLATION.

VACUUM CHECK VALVE

To check function of check valve, blow air through valve. Air must pass through in direction of arrow. See **Fig. 9** . Valve must remain closed in opposite direction. Ensure that check valve is installed correctly.

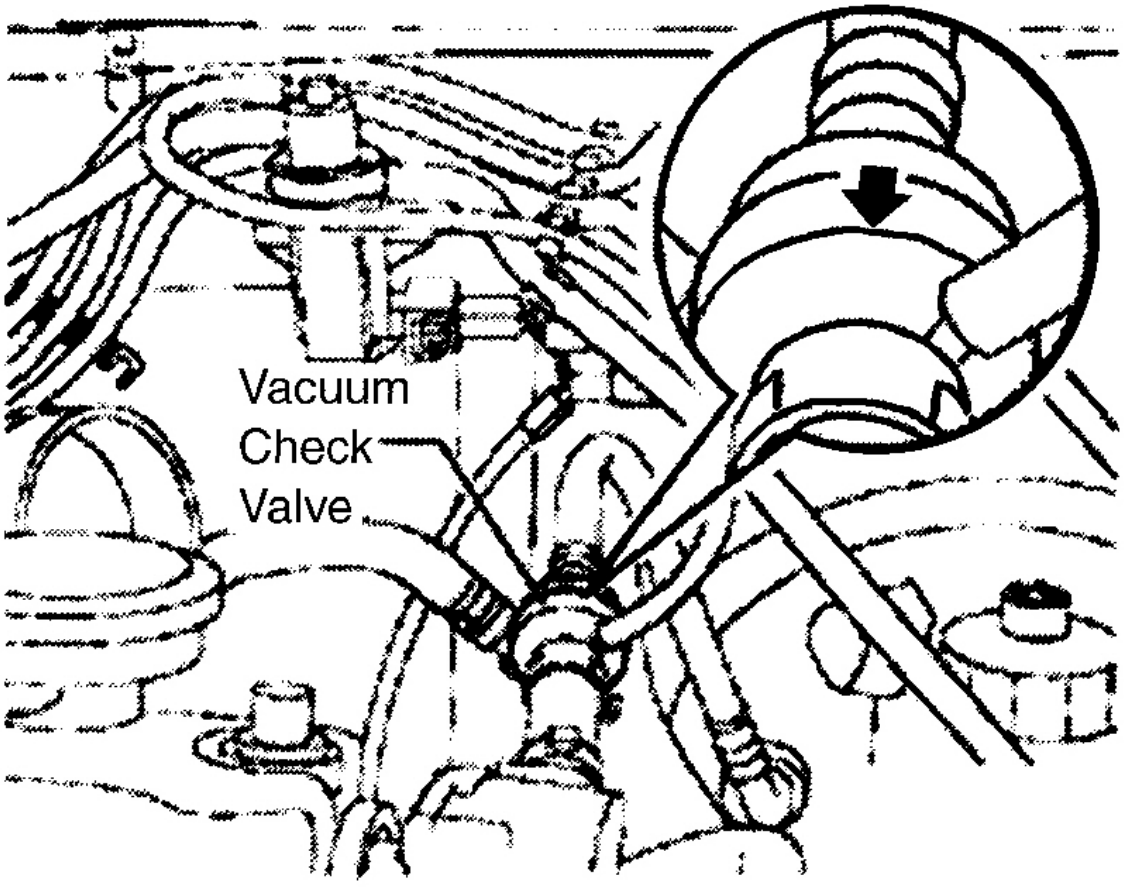


Fig. 9: Checking Function Of Vacuum Check Valve
Courtesy of VOLKSWAGEN UNITED STATES, INC.

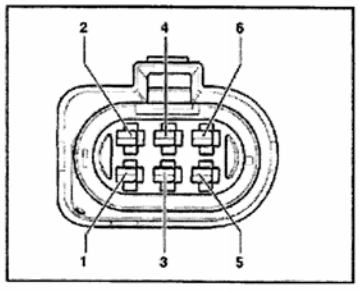
CIRCUIT TESTING

NOTE: If the measured figures only deviate slightly from the specifications, clean sockets and plugs of the testers and adapter cables (with contact spray G 000 700 04 or equivalent) and repeat check. Before replacing components, check wiring and connections and also, particularly for specifications of less than 10 ohms, repeat resistance check on component.

ELECTRIC VACUUM PUMP (MODELS UP TO 05/2002)

Disconnect electric brake vacuum pump 6-pin harness connector. Vacuum pump is located on subframe in front of steering box, left side. See **Fig. 8** . Check for poor, loose, corroded or damaged terminal connection. Also, check instrument panel fuses No. 31 and 51. If problem is found, repair as necessary. After repair, recheck vacuum pump operation. See **ELECTRIC VACUUM PUMP** under TESTING.

If no problem with terminals is found, perform circuit testing of vacuum pump. See **ELECTRIC VACUUM PUMP TESTING (MODELS UP TO 05/2002)** table. For aid in identifying terminals and circuits, see **Fig. 10** . For Engine Control Module (ECM) terminal testing and identification, see appropriate article in ENGINE PERFORMANCE.



Contact assignment of connectors for voltage supply and diagnosis.

Contact 1	=	Ground
Contact 2	=	Connection with engine control module (pin 22)
Contact 3	=	Voltage supply from ignition/starter switch through fuse 31
Contact 4	=	Not applicable
Contact 5	=	Voltage supply from Battery +through fuse 51
Contact 6	=	Not applicable

All contacts not listed are currently not assigned and must never be connected to other components!

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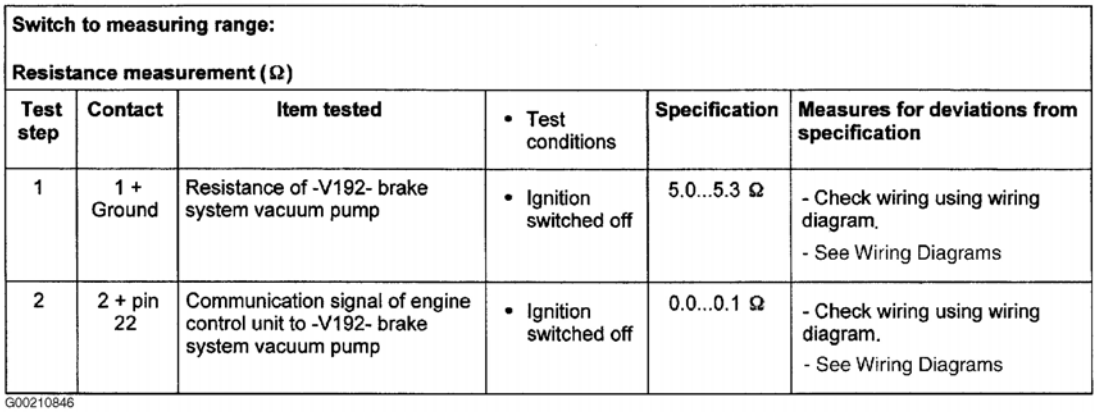
Fig. 10: Identifying Electric Vacuum Pump Harness Connector Terminals & Pin Voltage Chart (Models Up To 05/2002)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

ELECTRIC VACUUM PUMP TESTING (MODELS UP TO 05/2002)

Test	Perform Test Step No.	See Fig.
Brake System Vacuum Pump Resistance	1	Fig. 11
Communication Signal From ECM To Brake System	2	Fig.

Vacuum Pump		**11**
Ignition/Starter Switch Voltage Supply To Brake System Vacuum Pump	3	**Fig. 12**
Resistance Of Ignition/Starter Switch To Brake System Vacuum Pump Circuit	4	**Fig. 13**
Resistance Of Battery To Brake System Vacuum Pump Circuit	5	**Fig. 14**
Brake System Vacuum Pump Battery Voltage Supply	6	**Fig. 15**



Switch to measuring range:

Resistance measurement (Ω)

Test step	Contact	Item tested	• Test conditions	Specification	Measures for deviations from specification
1	1 + Ground	Resistance of -V192- brake system vacuum pump	• Ignition switched off	5.0...5.3 Ω	- Check wiring using wiring diagram. - See Wiring Diagrams
2	2 + pin 22	Communication signal of engine control unit to -V192- brake system vacuum pump	• Ignition switched off	0.0...0.1 Ω	- Check wiring using wiring diagram. - See Wiring Diagrams

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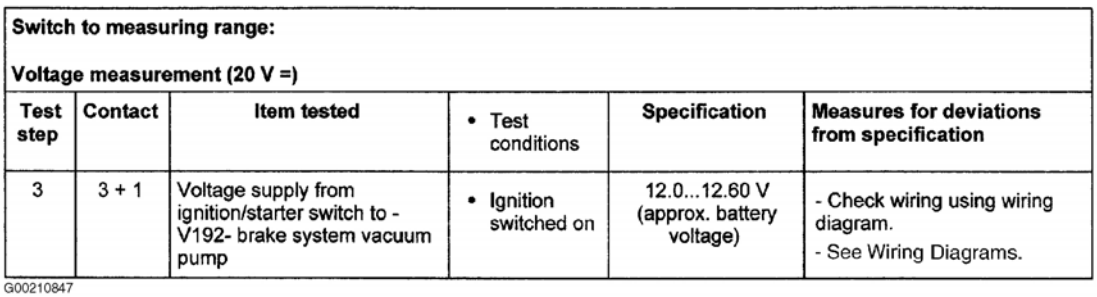
Fig. 11: Vacuum Pump Electrical Test Steps No. 1 & 2 (Models Up To 05/2002)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



Switch to measuring range:

Voltage measurement (20 V =)

Test step	Contact	Item tested	• Test conditions	Specification	Measures for deviations from specification
3	3 + 1	Voltage supply from ignition/starter switch to -V192- brake system vacuum pump	• Ignition switched on	12.0...12.60 V (approx. battery voltage)	- Check wiring using wiring diagram. - See Wiring Diagrams.

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Fig. 12: Vacuum Pump Electrical Test Step No. 3 (Models Up To 05/2002)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Switch to measuring range: Resistance measurement (Ω)					
Test step	**Contact**	**Item tested**	• Test conditions	**Specification**	**Measures for deviations from specification**
4	3 + fuse 31	Resistance of connection of ignition/starter switch to -V192- brake vacuum pump	• Ignition switched off	0.1...0.9 Ω	- Check wiring using wiring diagram - See Wiring Diagrams

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Fig. 13: Vacuum Pump Electrical Test Step No. 4 (Models Up To 05/2002)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Switch to measuring range: Resistance measurement (Ω)					
Test step	**Contact**	**Item tested**	• Test conditions	**Specification**	**Measures for deviations from specification**
5	5 + fuse 51	Resistance of connection of battery to -V192- brake system vacuum pump	• Ignition switched off	1.7...1.8 Ω	- Check wiring using wiring diagram - See Wiring Diagrams.

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Fig. 14: Vacuum Pump Electrical Test Step No. 5 (Models Up To 05/2002)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Switch to measuring range: Voltage measurement (20 V =)					
Test step	**Contact**	**Item tested**	• Test conditions	**Specification**	**Measures for deviations from specification**
6	5 + 1	Voltage supply of Battery to -V192- brake system vacuum pump	• Ignition switched on	12.0...12.81 V (approx. battery voltage)	- Check wiring using wiring diagram - See Wiring Diagrams

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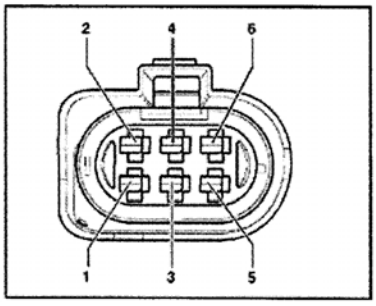
Fig. 15: Vacuum Pump Electrical Test Step No. 6 (Models Up To 05/2002)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

ELECTRIC VACUUM PUMP (MODELS FROM 06/2002)

Disconnect electric brake vacuum pump 6-pin harness connector. Vacuum pump is located on subframe in front of steering box, left side. See **Fig. 8** . Check for poor, loose, corroded or damaged terminal connection. Also,

check instrument panel fuse No. 51. If problem is found, repair as necessary. After repair, recheck vacuum pump operation. See **ELECTRIC VACUUM PUMP** under TESTING.

If no problem with terminals is found, perform electrical testing of vacuum pump. See **ELECTRIC VACUUM PUMP TESTING (MODELS FROM 06/2002)** table. For aid in identifying terminals and circuits, see **Fig. 16** . For Engine Control Module (ECM) terminal testing and identification, see appropriate article in ENGINE PERFORMANCE.



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Contact assignment of connectors for voltage supply and diagnosis.

Contact 1 = Ground
Contact 2 = Connection with engine control module (pin 22)
Contact 3 = Not applicable
Contact 4 = Not applicable
Contact 5 = Voltage supply from Battery + through fuse 51
Contact 6 = Not applicable

All contacts not listed are currently not assigned and must never be connected to other components!

Fig. 16: Identifying Electric Vacuum Pump Harness Connector Terminals & Pin Voltage (Models From 06/2002)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

ELECTRIC VACUUM PUMP TESTING (MODELS FROM 06/2002)

Test	Perform Test Step No.	See Fig.
Brake System Vacuum Pump Resistance	1	Fig. 17
Communication Signal From ECM To Brake System Vacuum Pump	2	Fig. 17
Resistance Of Battery Power Supply To Brake System Vacuum Pump Circuit	3	Fig. 18
Brake System Vacuum Pump Battery Voltage Supply	4	Fig. 19

Switch to measuring range:

Resistance measurement (Ω)

Test step	Contact	Item tested	• Test conditions	Specification	Measures for deviations from specification
1	1 + ground	Resistance of -V192- brake system vacuum pump	• Ignition switched off	5.0 to 5.3 Ω	- Check wiring using wiring diagram. - See Wiring Diagrams
2	2 + pin 22	Communication signal of engine control module to -V192- brake system vacuum pump	• Ignition switched off	0.0 to 0.1 Ω	- Check wiring using wiring diagram - See Wiring Diagrams

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Fig. 17: Vacuum Pump Electrical Test Steps No. 1 & 2 (Models From 06/2002)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Switch to measuring range:

Resistance measurement (Ω)

Test step	Contact	Item tested	• Test conditions	Specification	Measures for deviations from specification
3	5 + fuse 51	Resistance of connection of battery to -V192- brake system vacuum pump	• Ignition switched off	1.7 to 1.8 Ω	- Check wiring using wiring diagram - See Wiring Diagrams

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Fig. 18: Vacuum Pump Electrical Test Step No. 3 (Models From 06/2002)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Switch to measuring range:

Voltage measurement (20 V =)

Test step	Contact	Item tested	• Test conditions	Specification	Measures for deviations from specification
4	5 + 1	Voltage supply of Battery to -V192- brake system vacuum pump	• Ignition switched off	12.0 to 12.81 V (approx. battery voltage)	- Check wiring using wiring diagram. - See Wiring Diagrams.

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Fig. 19: Vacuum Pump Electrical Test Step No. 4 (Models From 06/2002)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

SERVICING

WARNING: Use only DOT 4 brake fluid from a sealed container. DO NOT mix brake fluid with any other type.

CAUTION: Brake fluid will damage painted surfaces. If brake fluid is spilled on painted surface, wipe it off immediately and clean with alcohol.

Manufacturer recommends replacing brake fluid every 2 years. After replacing brake fluid, bleed brake system. See **BLEEDING BRAKE SYSTEM** .

REMOVAL & INSTALLATION

CAUTION: Brake fluid will damage painted surfaces. If brake fluid is spilled on painted surface, wipe it off immediately and wash with water.

CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until adaptation systems have completed a relearn cycle. See COMPUTER RELEARN PROCEDURES article in GENERAL INFORMATION before disconnecting battery.

NOTE: Before disconnecting battery, on vehicles equipped with coded anti-theft radio, note radio code, obtain if necessary.

BRAKE BOOSTER

Removal

1. Obtain radio code. Disconnect negative battery cable. Clamp and remove clutch master cylinder supply hose. Remove ABS control module and hydraulic unit. See REMOVAL & INSTALLATION in appropriate ANTI-LOCK BRAKE SYSTEM article. Disconnect brake lines to master cylinder. Disconnect vacuum hose from brake booster.
2. On vehicles equipped with 1.9L TDI engine, remove retainer for wiring harness from vacuum pump.
3. On all models, remove harness connector from retainer (2). See **Fig. 20** . Disconnect in-line harness connector (1).
4. Remove lower instrument panel trim. Remove bolts (1) and remove cover "A". See **Fig. 21** . On vehicles equipped with manual transmission, remove connecting plate between clutch and brake pedals. Remove brake light switch. See appropriate procedure under **BRAKELIGHT SWITCH** .

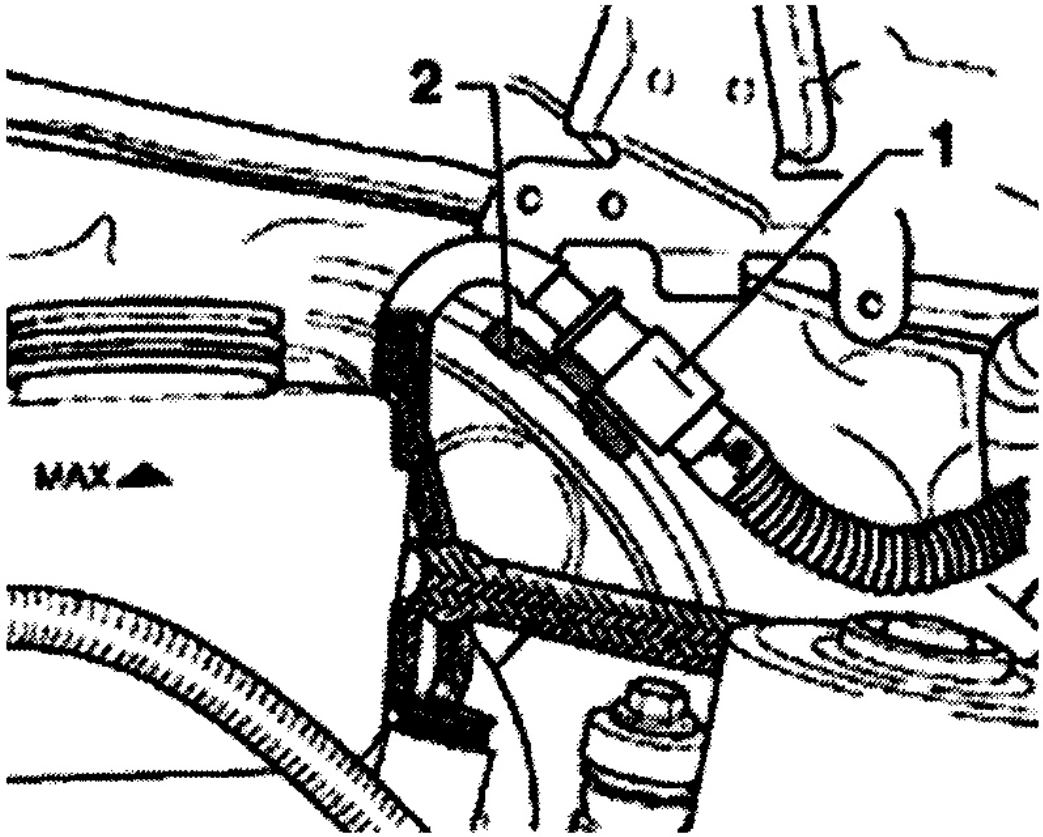


Fig. 20: Locating In-Line Harness Connector
Courtesy of VOLKSWAGEN UNITED STATES, INC.

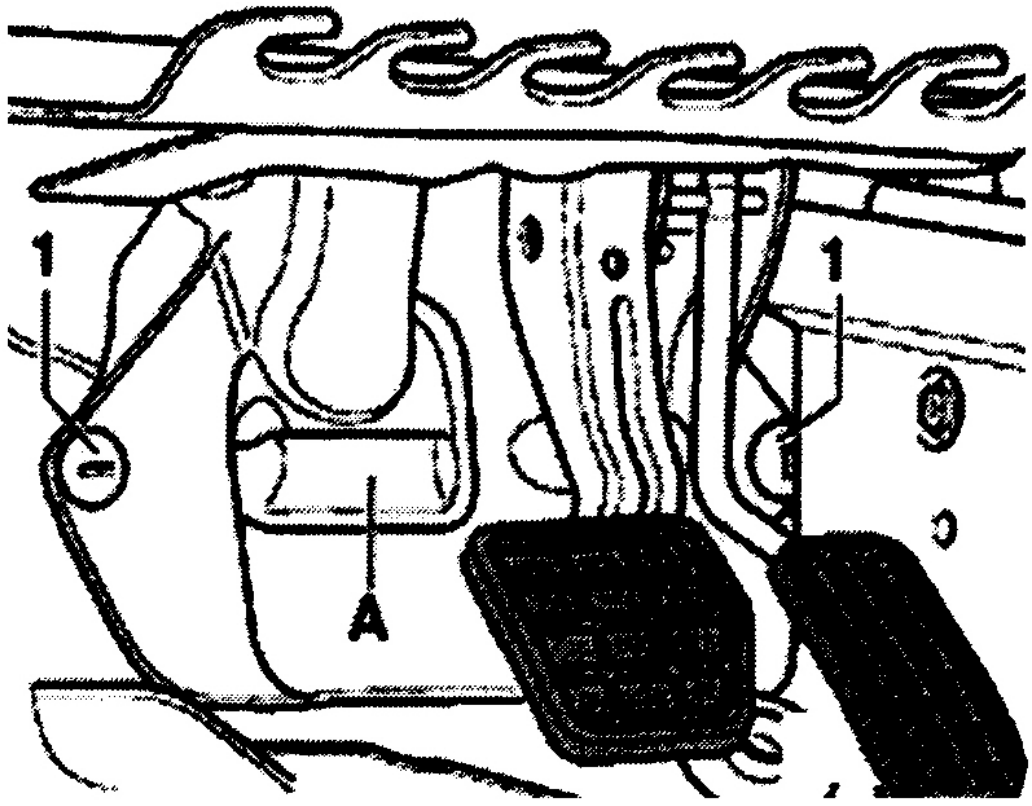


Fig. 21: Removing Lower Instrument Panel Trim
Courtesy of VOLKSWAGEN UNITED STATES, INC.

5. Remove brake pedal from brake booster by first pressing brake pedal in direction of brake booster and hold. Insert special tool T 10006 and pull in direction of driver's seat, when doing this counter-hold on brake pedal (at this moment the pedal must not be allowed to move backward). See **Fig. 22** . Mounting retaining tabs will be pressed off the ball head of the push rod. For ease of illustration separating the brake pedal from the brake booster is shown with the pedal cluster removed.
6. Remove brake booster-to-firewall nuts. Guide brake booster with brake master cylinder forward to remove.

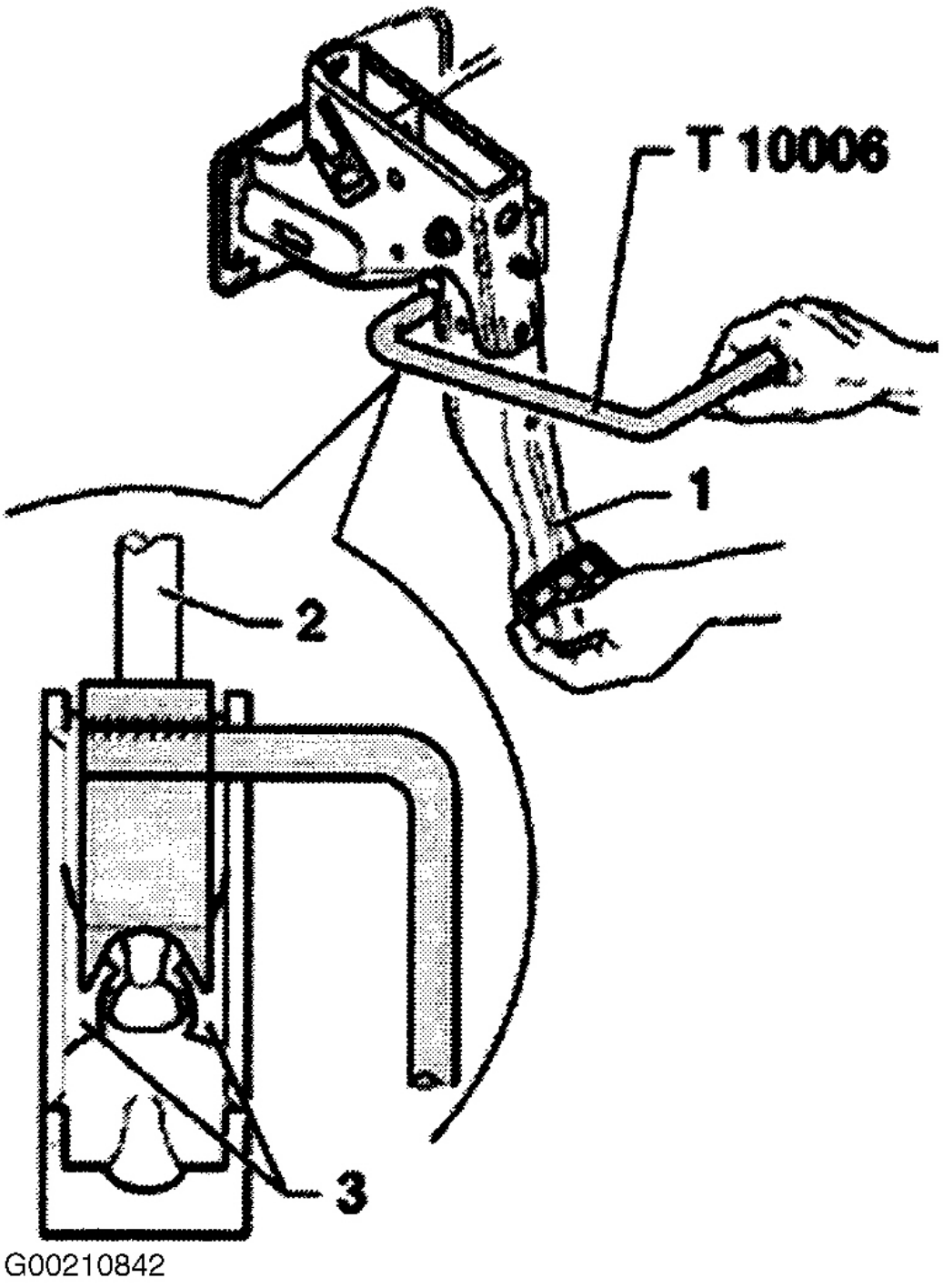


Fig. 22: Disconnecting Brake Pedal From Booster
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installation

Before installing master cylinder, clean residual brake fluid from brake booster. Ensure push rod is properly centered in master cylinder. To install, reverse removal procedure. Hold push rod ball head in front of mounting and push brake pedal in direction of brake booster until the ball head engages audibly. Tighten fasteners to specification. See **TORQUE SPECIFICATIONS** . Adjust brake light switch. See **BRAKELIGHT SWITCH** under ADJUSTMENTS. Bleed brake system. See **BLEEDING BRAKE SYSTEM** .

BRAKELIGHT SWITCH

Before removing brakelight switch, identify which one of 2 possible switch types is installed. "Old style" switch is identified by large approximately 10 mm plunger tip button, and square plunger shaft. "New style" switch is identified by small approximately 4 mm plunger tip without button, and round plunger shaft.

Brakelight Switch (Old Style)

1. Remove driver's side lower instrument panel cover. Brakelight switch is located on bracket above brake pedal. Disconnect brake light switch harness connector. See **Fig. 23** . Turn brakelight switch 90° counterclockwise, and guide switch from bracket.
2. To install, pull switch plunger out to stop. Depress and hold brake pedal in down position. Guide switch into opening and turn 90° clockwise. Slowly release brake pedal to stop. This automatically adjusts switch plunger travel. Verify proper function of brake lights.

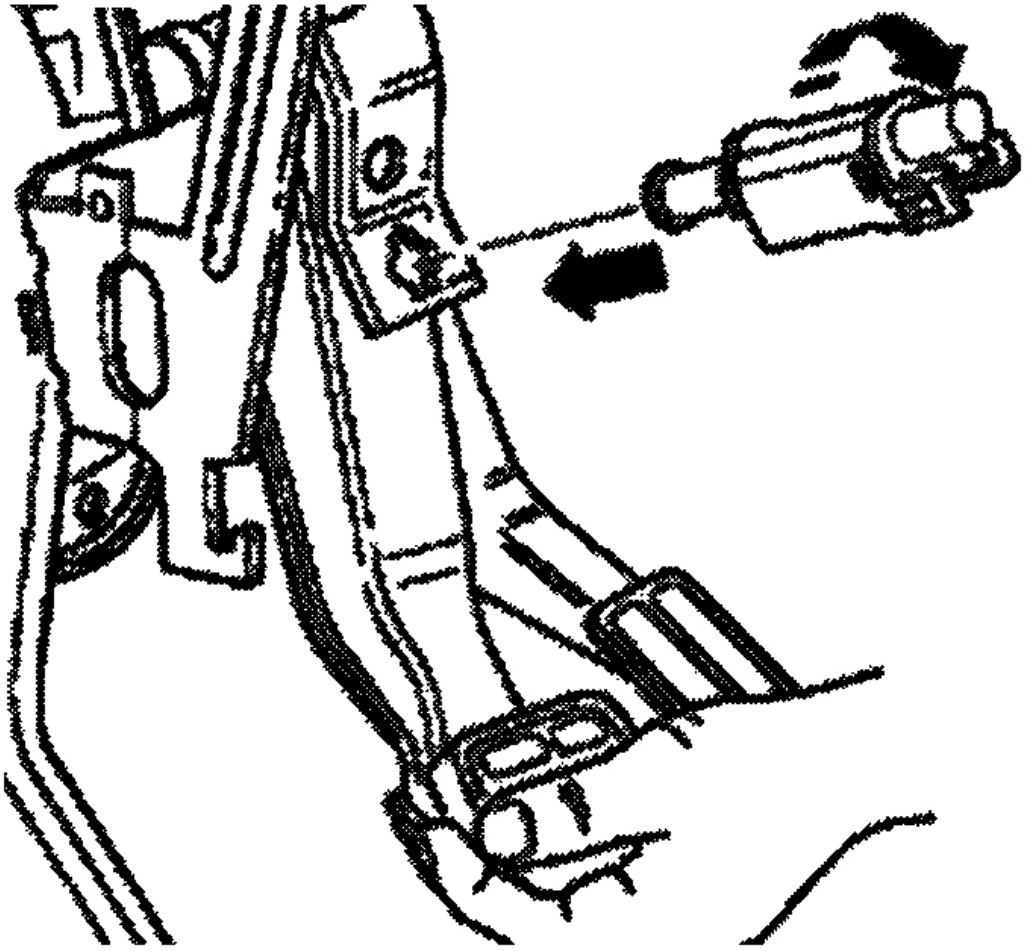
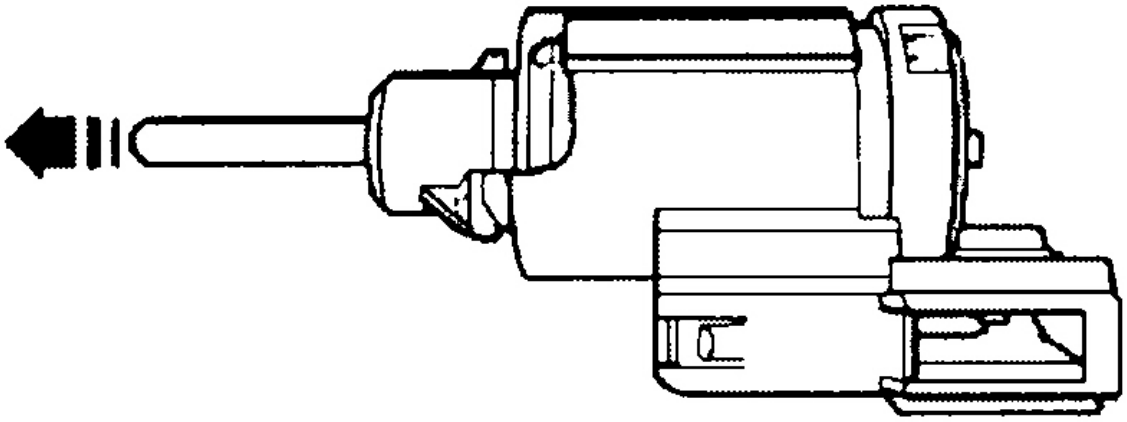


Fig. 23: Removing, Installing & Adjusting Brake Light Switch (Old Style)
Courtesy of AUDI OF AMERICA, INC.

Brakelight Switch (New Style)

1. Remove driver's side lower instrument panel cover. Brakelight switch is located on bracket above brake pedal. Disconnect brake light switch harness connector. Turn brakelight switch 45° counterclockwise, and guide switch from bracket. Dispose of switch accordingly. "New style" switches must NOT be reused after removal. Always replace.
2. "New style" switches have an internal switch mechanism that will be damaged if not installed and adjusted according to the following procedure. DO NOT depress switch plunger or otherwise rotate the retaining collar of the switch prior to installation. Brake pedal must be held in the up position (not depressed) during switch installation.

3. Pull out plunger completely (arrow). See **Fig. 24** . Hold brake pedal in up position (against stop). Note orientation of retainer tabs on switch and carefully insert switch into retainer mounting hole.
4. Push switch in and seat fully into opening (pressing plunger against brake pedal to adjust). Once seated, secure switch by turning clockwise 45°. This action turns the plunger shoe into the correct orientation to make electrical contacts in switch operate, as well as locks in the plunger adjustment against the brake pedal. Switch must be rotated until it is fully locked and harness connector is in horizontal position. Inspect to ensure internal stop pin on retaining collar is fully seated against outer shell. Reconnect brakelight switch harness connector. Verify proper function of brake lights.



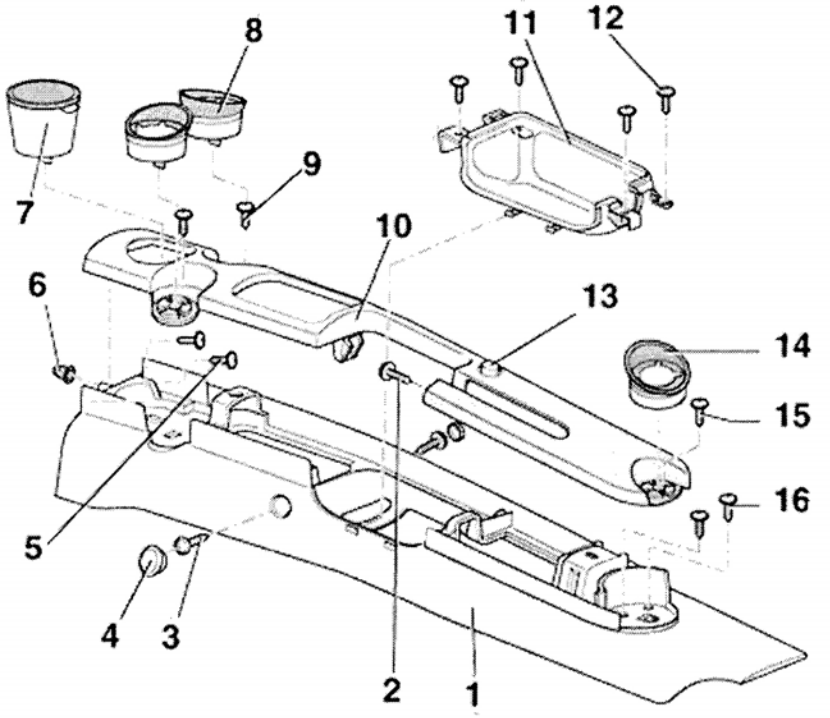
G00178839

Fig. 24: Identifying Brake Light Switch (New Style)
Courtesy of AUDI OF AMERICA, INC.

CENTER CONSOLE

Models Built Up To January 2001

Use following illustrations to aid in removing and installing center console. For models built up to January 2001, see **Fig. 25** -**Fig. 28** .



Center console up to▶01.01, removing and installing

WARNING!

Before working on electrical system: Disconnect battery Ground (GND) strap.

Removing

Note:

- *The removal and installation procedures may have to be modified slightly depending on equipment variants.*
- *Obtain radio unit code before disconnecting battery.*

Remove center armrest. SEE REMOVING & INSTALLING CENTER ARMREST ilustration.

Remove ashtray-7- as well as the drink holders -8- and -14-. To remove drink holders turn holder in counter clockwise direction while lifting up.

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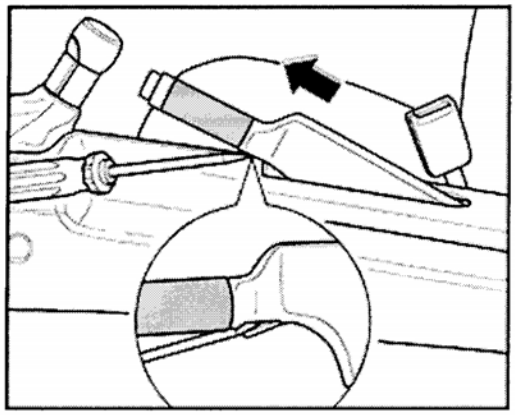
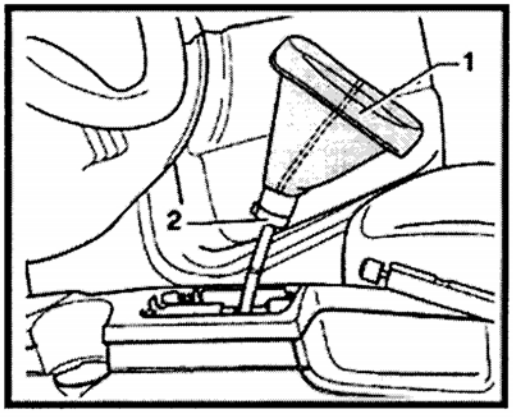
Fig. 25: Removing & Installing Center Console Models Built Up To January 2001 (1 Of 3)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



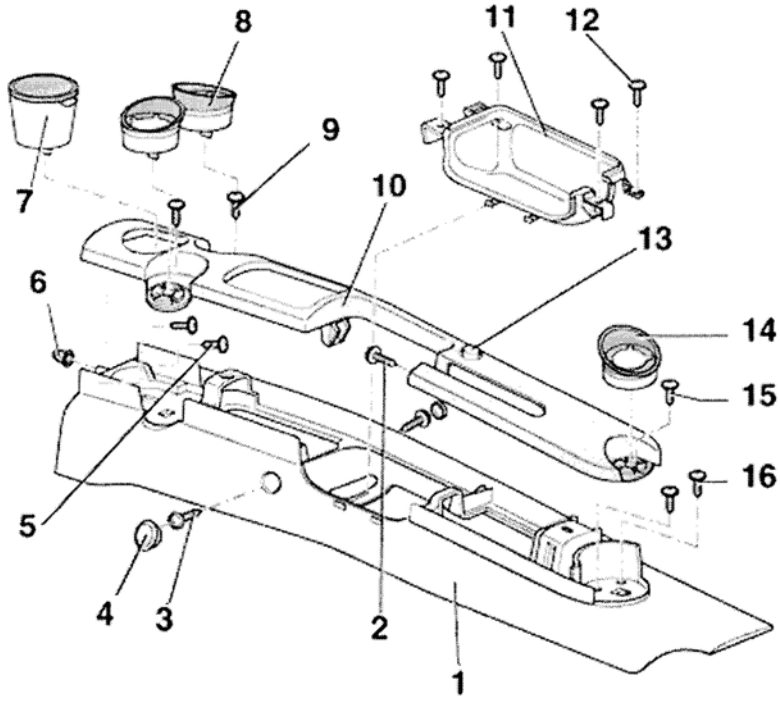
- Pull parking brake lever on, release trim using a screwdriver and pull forward off parking brake lever -arrow-.



- Unclip gearshift boot -1- from center console and slide upward.

G00297295

Fig. 26: Removing & Installing Center Console Models Built Up To January 2001 (2 Of 3)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



- Unscrew screws - 9 -, - 2 - and - 15 -.
- Pull cover - 10 - off and separate cigarette lighter - 13 - connection.
- Remove screws - 12 - and take out insert - 11 -.
- Unclip cover caps - 4 - and remove screws - 3 -.
- Remove screws - 5 - and - 16 -.
- Lift rear of center console - 1 -, pull to rear and remove upward over the gearshift.

Installing

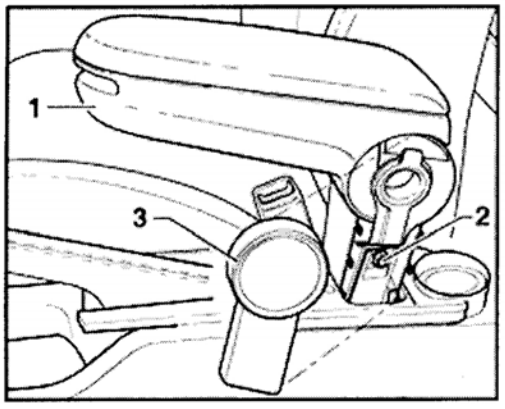
Install in reverse order of removal.

Note:

After reconnecting battery, ensure the vehicle equipment (radio, clock, electric windows) is checked as per Workshop manual and/or Owner's manual.

G00297296

Fig. 27: Removing & Installing Center Console Models Built Up To January 2001 (3 Of 3)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



Front armrest, removing and installing

Removing

- Unclip trim -3- from center armrest -1-.
- Remove screw -2- (18 Nm) and remove center armrest.

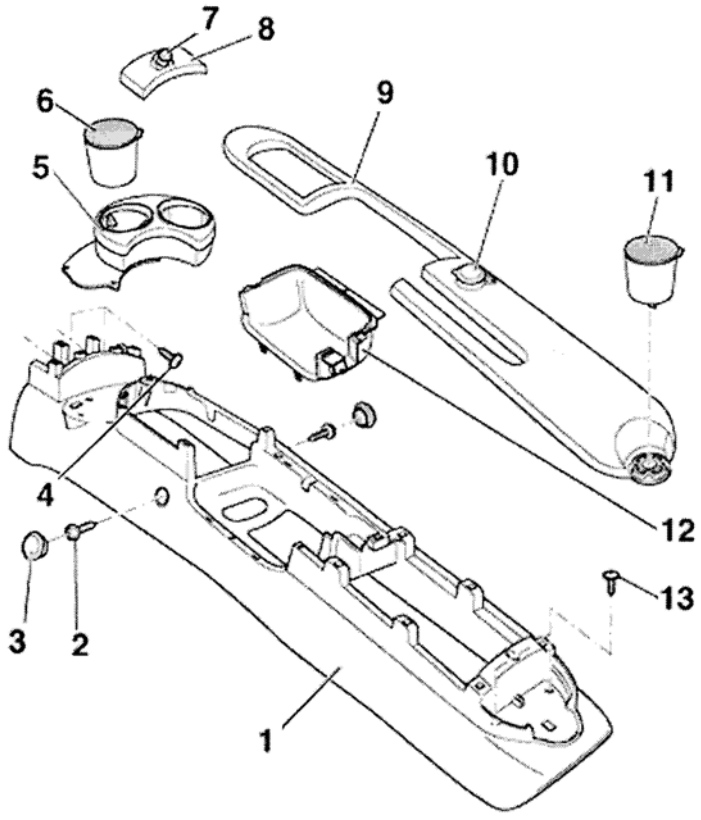
Installing

Install in reverse order of removal.

Fig. 28: Removing & Installing Front Armrest
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Models Built Between February 2001 To April 2003

For models built between February 2001 to April 2003, see **Fig. 28** -**Fig. 32** .



Center console from 02.01 to 04.03, removing and installing

WARNING

Before working on electrical system: Disconnect battery Ground (GND) strap.

Removing

Note:
The removal and installation procedures may have to be modified slightly depending on equipment variants.

Obtain radio unit code before disconnecting battery.

Remove center armrest. See REMOVING & INSTALLING CENTER ARMREST ilustration.

Remove ashtray -11- and drink holder -5-. To remove rear drink holders, turn in counter-clockwise direction while lifting up.
To remove front drink holder, see REMOVING & INSTALLING FRONT DRINK HOLDER ilustration.

Fig. 29: Removing & Installing Center Console Models Built Between February 2001 & April 2003 (1 Of 3)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

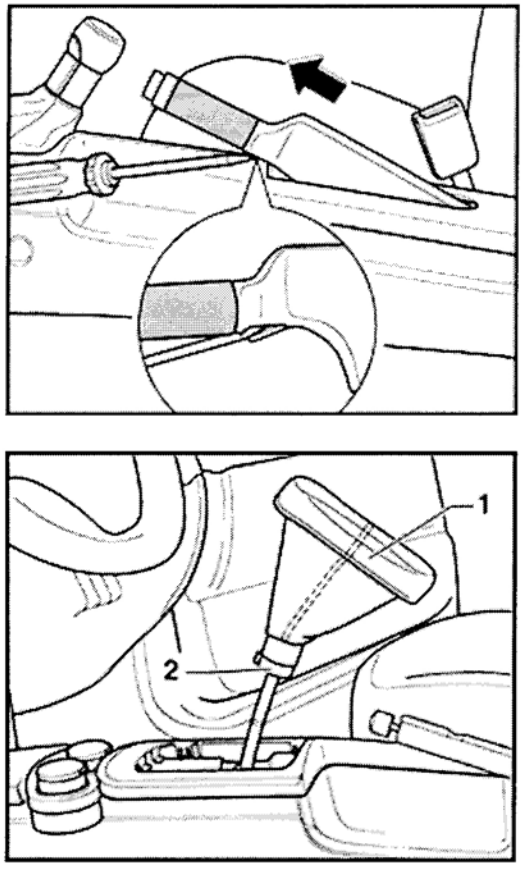
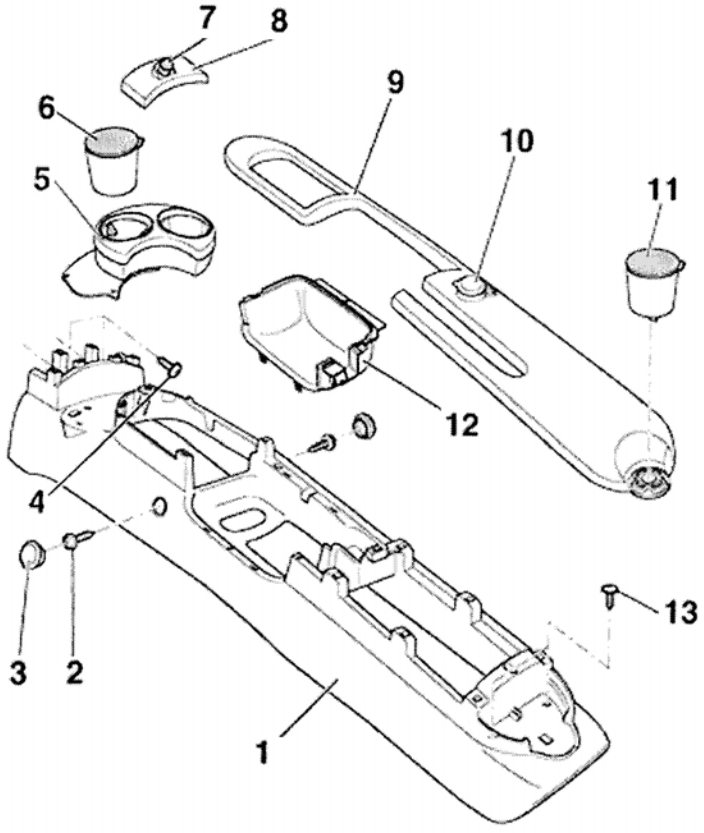

- Pull parking brake lever on, release trim using a screwdriver and pull forward off parking brake lever -arrow-.
- Unclip gearshift boot -1- from center console and slide upward.
1
2
G00297299

Fig. 30: Removing & Installing Center Console Models Built Between February 2001 & April 2003 (2 Of 3)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



Pull cover -8- off separate cigarette lighter -7- connection.

Pull cover -9- off and separate power socket -10- connection.

Remove insert -12-.

Unclip cover caps -3- and remove screws -2-.

Remove screws -4- and -13-.

Lift rear of center console -1-, pull to rear and remove upward over the gear shift.

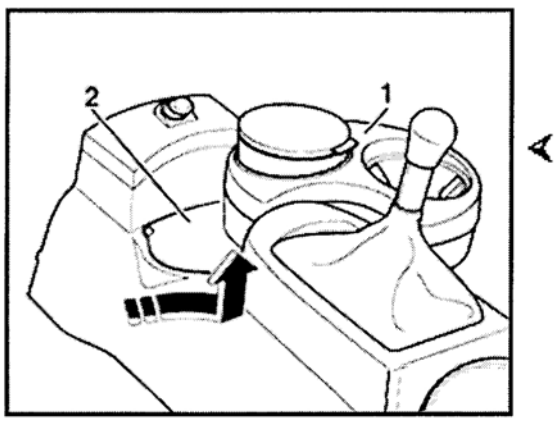
Installing

Install in reverse order of removal.

Note:

After reconnecting battery, ensure the vehicle equipment (radio, clock, electric windows) is checked as per Workshop manual and/or Owner's manual.

Fig. 31: Removing & Installing Center Console Models Built Between February 2001 & April 2003 (3 Of 3)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



Drink holder from ▶02.01, removing and installing

Removing

- Slide drink holder -1- to right onto limit stop and then unhook base plate -2- (together with drink holder -1-) from center console - arrow-.

Installing

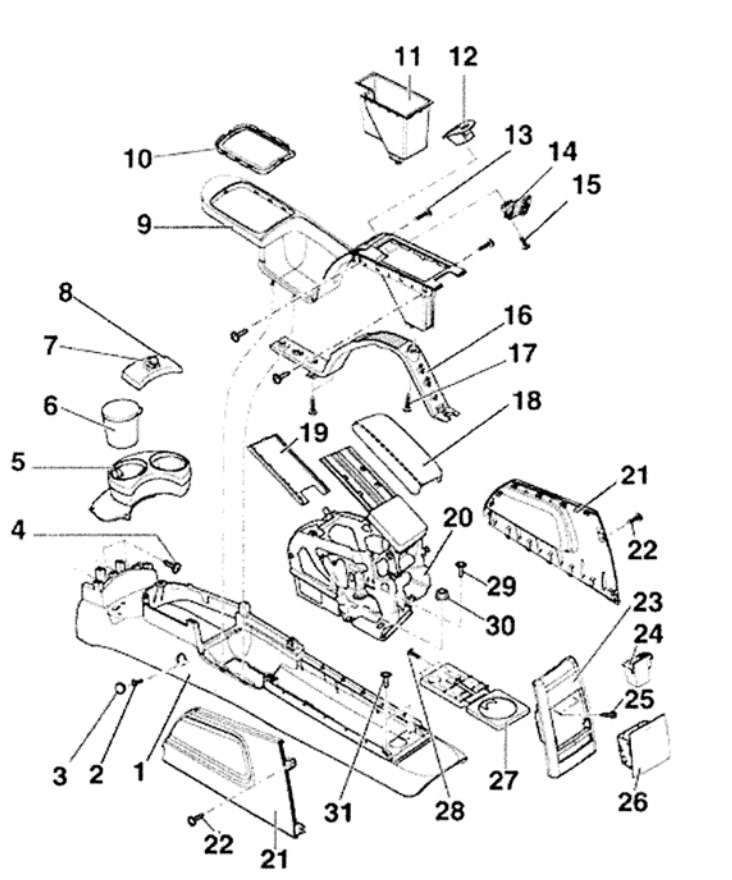
Installation is reverse of removal.

Fig. 32: Removing & Installing Front Drink Holder

Courtesy of VOLKSWAGEN UNITED STATES, INC.

Models Built After May 2003

For models built after May 2003, see **Fig. 32** -**Fig. 35** .



Center console from ▶05.03 in Sedan and from beginning of production inConvertible, removing and installing

WARNING!

Before working on electrical system: Disconnect battery Ground (GND) strap.

Removing

Note:

- *The removal and installation procedures may have to be modified slightly depending on equipment variants.*
- *Obtain radio unit code before disconnecting battery.*

- Remove ashtray - 26 - and drink holder - 27 -

See REMOVING & INSTALLING FRONT DRINK HOLDER illustration.

G00297302

Fig. 33: Removing & Installing Center Console Models Built May 2003 & Up (1 Of 3)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

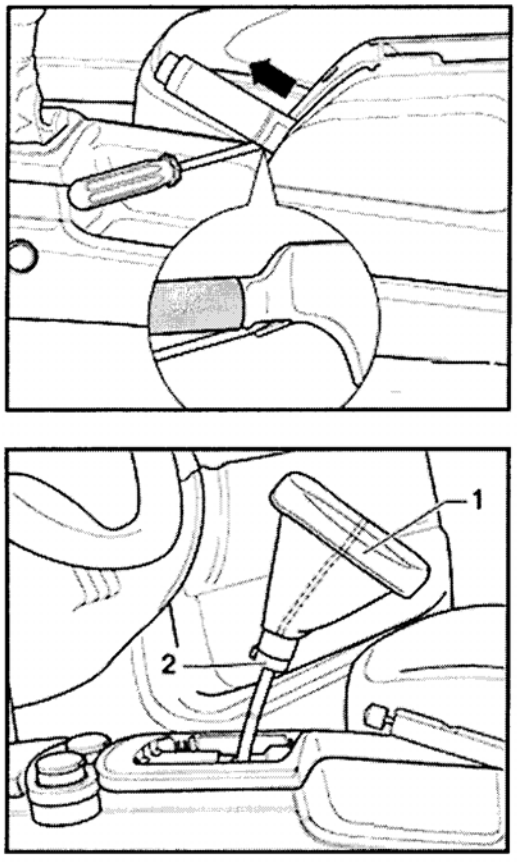

- Pull parking brake lever on, release trim using a screwdriver and pull forward off parking brake lever -arrow-.
- Unclip gearshift boot -1- from center console and slide upward.
1
2
G00297303

Fig. 34: Removing & Installing Center Console Models Built May 2003 & Up (2 Of 3)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

-Pull cover -8- off and separate cigarette lighter -7- connection.

-Remove stowage tray -11-.

-Remove screws -25-.

-Remove cover -23-.

-Remove screws -22-.

-Unclip cover -21- and pull out upward.

-Unclip cover caps -3- and remove screws -2-.

-Remove screws -13-.

-Unclip front of cover -9- and pull out upward.

-Remove screws -29-.

-Remove nut -30-.

-Remove armrest -20- upward.

-Remove screws -4- and -31-.

-Lift rear of center console -1-, pull to rear and take off upward over the gearshift.

Installing

Install in reverse order of removal.

Note:

After reconnecting battery, ensure the vehicle equipment (radio, clock, electric windows) is checked as per Workshop manual and/or Owner's manual.

G00297304

Fig. 35: Removing & Installing Center Console Models Built May 2003 & Up (3 Of 3)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

ELECTRIC VACUUM PUMP

1. Locate electric vacuum pump on subframe in front of steering box, left side. See **Fig. 8** . Unscrew hex bolt securing guard plate. Unscrew bolts on bracket for vacuum pump.
2. Disconnect vacuum hose (arrow) from vacuum pump. Disconnect electric vacuum pump harness connector. Remove pump.
3. To remove bracket (arrow), unscrew nut (2) from bolt (1). Remove bolt (4) and detach bracket. To disassemble bracket further, remove bolts (3). Installation is reverse of removal procedure.

FRONT DISC BRAKE PADS

NOTE: To identify brake system equipped on vehicle, see BRAKE SYSTEM IDENTIFICATION table under IDENTIFICATION.

Removal (FS III)

1. Raise and support vehicle. Remove front wheels. Remove guide pin protective caps. See **Fig. 1** . Disconnect brake pad wear indicator harness connector.
2. Remove both guide pins from brake caliper. Remove brake caliper housing and secure with wire so that the weight of the brake caliper does not stress or damage brake hose. Remove brake pads from front brake caliper housing.

Installation (FS III)

NOTE: Before pressing the piston back, draw off brake fluid from the reservoir with a bleeder bottle. Otherwise if reservoir has been topped off, fluid will overflow and cause damage.

1. Before inserting new brake pads, press piston back into the cylinder with piston resetting tool. Brake pad with black three finger clip is to be used on the outer side of brake caliper housing.
2. Install brake caliper housing with brake pads on wheel bearing housing, lower part of brake caliper housing first. Brake caliper housing lug must be behind the wheel bearing housing guide. Secure brake caliper housing to brake carrier with both guide pins and tighten to specification. See **TORQUE SPECIFICATIONS** .
3. Connect brake pad wear indicator harness connector. After brake pad change firmly depress brake pedal several times with vehicle stationary, so that the brake pads are properly seated in their normal operating position. Check brake fluid level.

Removal (FN3)

1. Raise and support vehicle. Remove front wheels. Remove guide pin protective caps. See **Fig. 2** . Pry brake pad retaining spring out from brake caliper housing with a screwdriver and remove. Disconnect brake pad wear indicator harness connector.
2. Remove both guide pins from brake caliper. Remove brake caliper housing and secure with wire so that the weight of the brake caliper does not stress or damage brake hose. Remove brake pads from brake caliper housing.

Installation (FN3)

1. Before inserting new brake pads, press piston back into the cylinder with piston resetting tool. Before pressing the piston back, draw off brake fluid from the reservoir with a bleeder bottle. Otherwise if reservoir has been topped off, fluid will overflow and cause damage. When installed arrow on brake pad backplate must point downward. Ensure this pads are installed correctly. See **Fig. 36** .
2. Install brake caliper housing with brake pads on wheel bearing housing, lower part of brake caliper housing first. Brake caliper housing lug must be behind the wheel bearing housing guide. Secure brake caliper housing to brake carrier with both guide pins and tighten to specification. See **TORQUE SPECIFICATIONS** .
3. Connect brake pad wear indicator harness connector. After brake pad change firmly depress brake pedal several times with vehicle stationary, so that the brake pads are properly seated. Check brake fluid level.

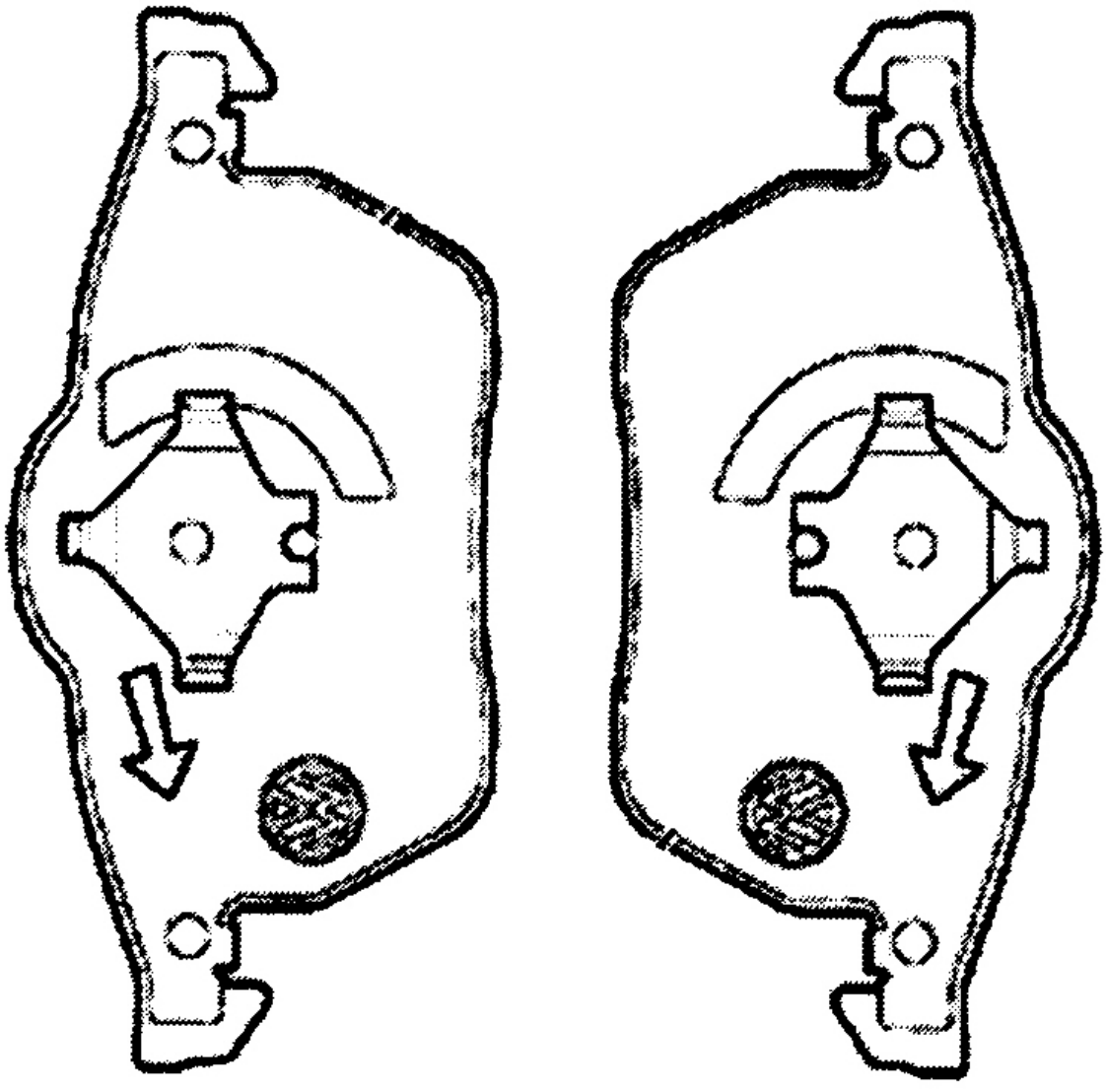


Fig. 36: Identifying Brake Pad Installation Position (FN3)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

FRONT & REAR BRAKE CALIPER

Removal & Installation

1. Raise and support vehicle. Remove wheels. Disconnect brakeline from caliper, and plug openings. Disconnect parking brake cables.
2. On all calipers, remove caliper mounting bolts. Remove caliper assembly from wheel bearing housing. To install, reverse removal procedure. Tighten mounting bolts to specification. See **TORQUE SPECIFICATIONS** . Bleed hydraulic brake system. See **BLEEDING PROCEDURES** under

BLEEDING BRAKE SYSTEM.

FRONT & REAR BRAKE ROTOR

Removal & Installation

1. Raise and support vehicle. Remove wheels. Remove brake caliper. See **FRONT & REAR BRAKE CALIPER** . Secure caliper with wire so that the weight of the brake caliper does not stress or damage brake hose.
2. On rear brakes, remove brake caliper carrier.
3. On front and rear, remove countersunk screw that holds rotor to hub. Pull rotor off hub. To install, reverse removal procedure. Tighten fasteners to specification. See **TORQUE SPECIFICATIONS** .

MASTER CYLINDER

Removal

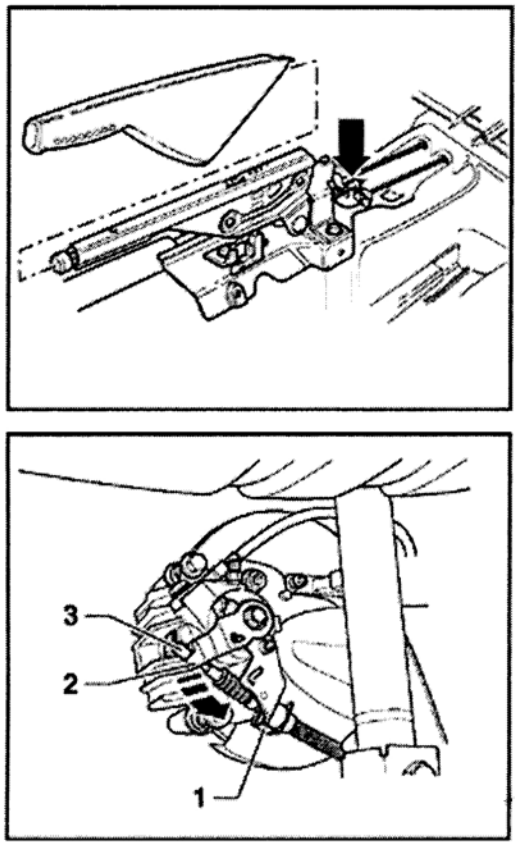
1. Obtain radio code. Disconnect negative battery cable. Clamp and remove clutch master cylinder supply hose. Remove intake hose and harness connector from mass air flow sensor. Remove air cleaner complete. On vehicles equipped with a 2.0L or 1.8L engines, remove protective housing for relays from cable channel.
2. To catch leaking brake fluid, place sufficient lint free cloths in area of plenum chamber, engine and transmission. Install bleeder hose and bleeder bottle to the front left brake caliper bleeder screw and open bleeder screw. Operate brake pedal until sufficient amount of brake fluid has been pumped out for the brake fluid level in the brake fluid reservoir to sink below the clutch master cylinder supply hose (if equipped). Close front left bleeder screw.
3. Disconnect brake fluid level warning indicator sensor harness connector. Disconnect brake pressure sender harness connectors.
4. Disconnect brake lines on brake master cylinder. Seal brake lines and threaded holes with plugs from repair kit Part No. 1H0 698 311 A, or equivalent. Remove brake master cylinder nuts. Carefully remove brake master cylinder from brake booster unit.

Installation

1. To install, reverse removal procedure. Always use NEW "O" ring between master cylinder and brake booster. When installing the brake master cylinder and brake booster unit together, make sure that the push rod is correctly located in the brake master cylinder.
2. Apply slight pressure to the brake pedal to move the push rod towards brake master cylinder; this makes it easier to guide brake master cylinder onto the push rod. Tighten fasteners to specification. See **TORQUE SPECIFICATIONS** .
3. Bleed hydraulic system. See **BLEEDING BRAKE SYSTEM** . After installing master cylinder, a zero compensation of brake pressure sender 1 and brake pressure sensor 2 must be performed in addition to basic settings on vehicles with ABS/EDL/ASR/ESP. See FUNCTION 04 - BASIC SETTING in appropriate ANTI-LOCK BRAKE SYSTEM & TRACTION CONTROL article.

PARKING BRAKE CABLES

Use following illustrations to aid in removal and installation of parking brake lever and cables. See **Fig. 37** -**Fig. 39** .

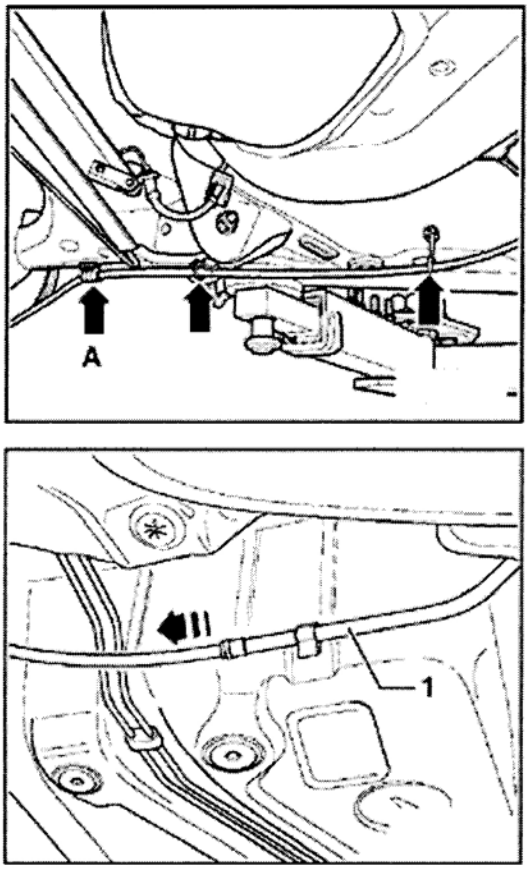


Parking brake cables for disc brakes - front wheel drive, removing and installing

Removing

- Remove center console extension. See CENTER CONSOLE Ilustrations.
- Release parking brake.
- Loosen adjustment nut -arrow- until the parking brake cable can be unhooked from the compensator.
- Raise vehicle.
- Remove clip -1-.
- Press brake lever -2- in direction of arrow and unhook brake cable -3-.

Fig. 37: Removing & Installing Parking Brake Cables (1 Of 3)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



➢ - Unclip parking brake cable from retainer on rear axle -arrow A- and unhook from retainers -arrows-.

➢ - Pull parking brake cable out from guide tube -1- in direction of arrow.

Fig. 38: Removing & Installing Parking Brake Cables (2 Of 3)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

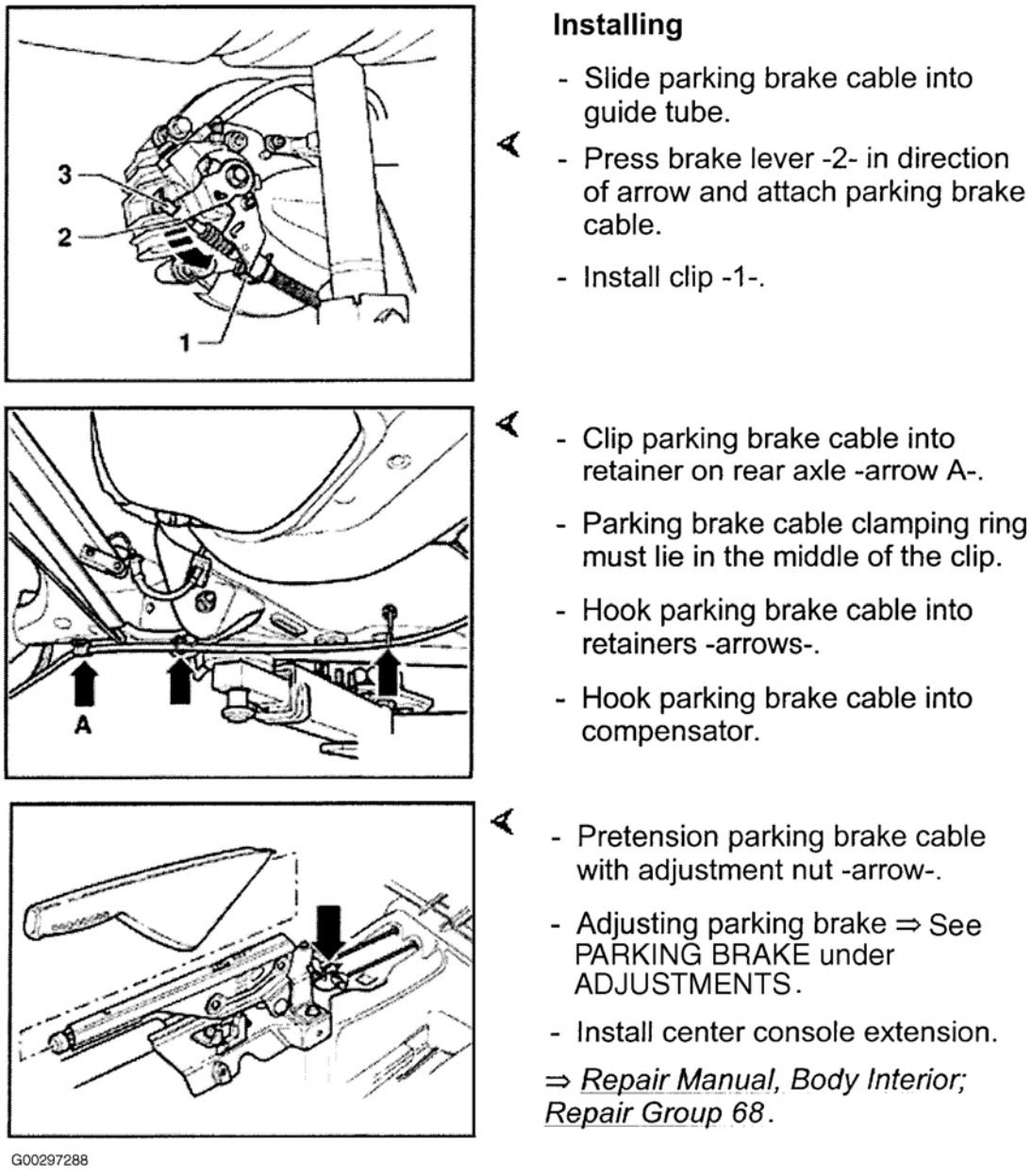

3
2
1
A
Installing
- Slide parking brake cable into guide tube.
- Press brake lever -2- in direction of arrow and attach parking brake cable.
- Install clip -1-.
- Clip parking brake cable into retainer on rear axle -arrow A-.
- Parking brake cable clamping ring must lie in the middle of the clip.
- Hook parking brake cable into retainers -arrows-.
- Hook parking brake cable into compensator.
- Pretension parking brake cable with adjustment nut -arrow-.
- Adjusting parking brake ⇒ See PARKING BRAKE under ADJUSTMENTS.
- Install center console extension.
⇒ Repair Manual, Body Interior; Repair Group 68.
G00297288

Fig. 39: Removing & Installing Parking Brake Cables (3 Of 3)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

PRESSURE SWITCHES

Removal & Installation

1. To catch leaking brake fluid, place sufficient lint free cloths in area of plenum chamber, engine and transmission. Install bleeder hose and bleeder bottle to the front left brake caliper bleeder screw and open bleeder screw.

2. Operate brake pedal until sufficient amount of brake fluid has been pumped out for the brake fluid level in the brake fluid reservoir to sink below the clutch master cylinder supply hose (if equipped). Close front left bleeder screw.
3. Disconnect pressure switch harness connector. Remove pressure switch.
4. To install, reverse removal procedure. Tighten switch to specification. See **TORQUE SPECIFICATIONS** . Bleed hydraulic system. See **BLEEDING BRAKE SYSTEM** .
5. After installation of switches a zero compensation of brake pressure sender 1 and brake pressure sensor 2 must be performed in addition to basic settings on vehicles with ABS/EDL/ASR/ESP. See FUNCTION 04 - BASIC SETTING in appropriate ANTI-LOCK BRAKE SYSTEM & TRACTION CONTROL article.

REAR DISC BRAKE PADS

NOTE: If re-using brake pads, mark them so that they can be installed in their original positions to prevent uneven braking.

Removal

1. Raise and support vehicle. Remove rear wheels.
2. Disconnect parking brake cable from caliper. Remove and discard caliper mounting bolts. See **Fig. 3** . Remove caliper, and wire aside. DO NOT allow caliper to hang by brake hose. Remove pads and retaining springs from caliper support.

Installation

1. Use Special Tool (VW 3272) along with Collar (3272/1) or equivalent, to seat caliper piston fully into cylinder bore. See **Fig. 40** . Seat piston by turning special tool until piston is bottomed out in bore. Before pressing the piston back, draw off brake fluid from the reservoir with a bleeder bottle. Otherwise if reservoir has been topped off, fluid will overflow and cause damage to finish.
2. Install brake pads, note positioning of pad to caliper (pin on pad must fit into groove on caliper piston). Pull protective foil off outer brake pad backing plate. Position caliper. Secure brake caliper housing with NEW self-locking bolts, and tighten to specification. See **TORQUE SPECIFICATIONS** .
3. With engine off, depress brake pedal several times to allow pads to move into operating position. Adjust parking brake as necessary. See **PARKING BRAKE** under ADJUSTMENTS.
4. Install wheels and tighten to specification. See **TORQUE SPECIFICATIONS** . After installing brake pads and before moving vehicle, depress brake pedal several times firmly to properly seat brake pads in their normal operating position. Check brake fluid level, and top off as necessary.

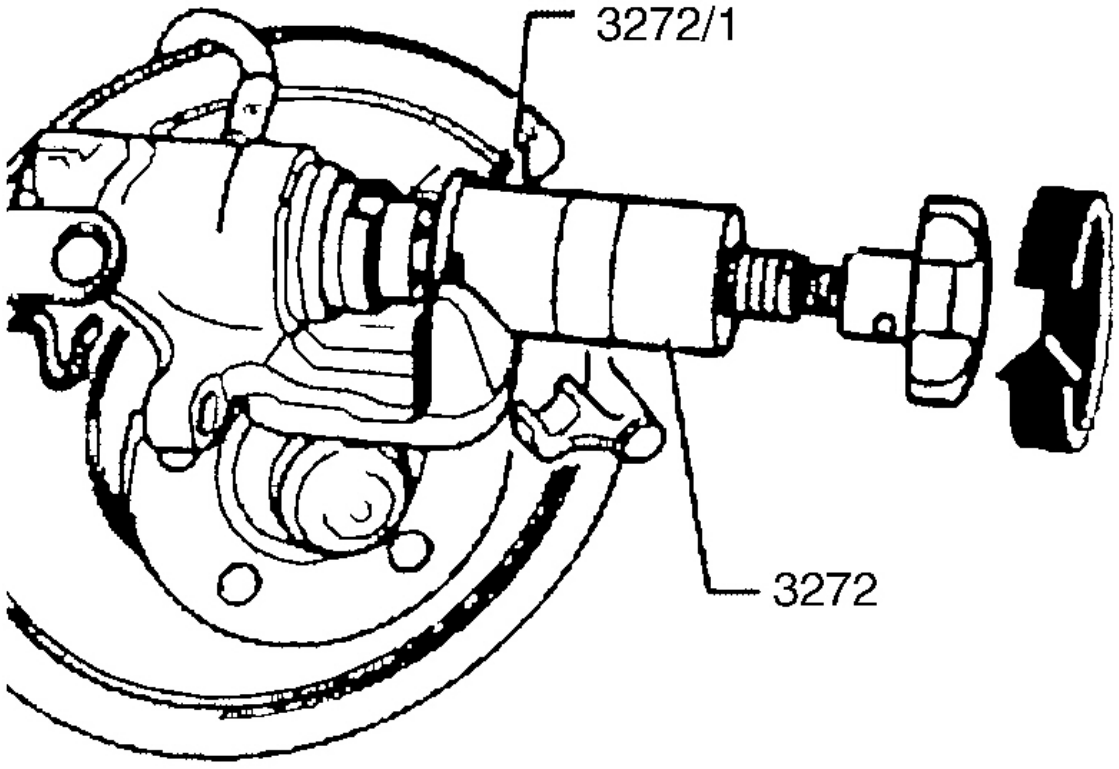


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Fig. 40: Compressing &/Or Removing Rear Brake Caliper Piston
Courtesy of VOLKSWAGEN UNITED STATES, INC.

VACUUM PUMP (DIESEL MODELS)

NOTE: There are no serviceable parts in vacuum pump. If found to be defective vacuum pump must be replaced.

1. Remove wiring harness retainer from vacuum pump. Loosen vacuum hose clamp (arrow A) and remove hose from pump. See **Fig. 41** . Remove bolts (arrow B) on flange. Remove vacuum pump.
2. When installing the vacuum pump be sure that the follower engages correctly with the camshaft. Install bolts (arrows B) on cylinder head flange. Secure vacuum hose with clamp (arrow A).

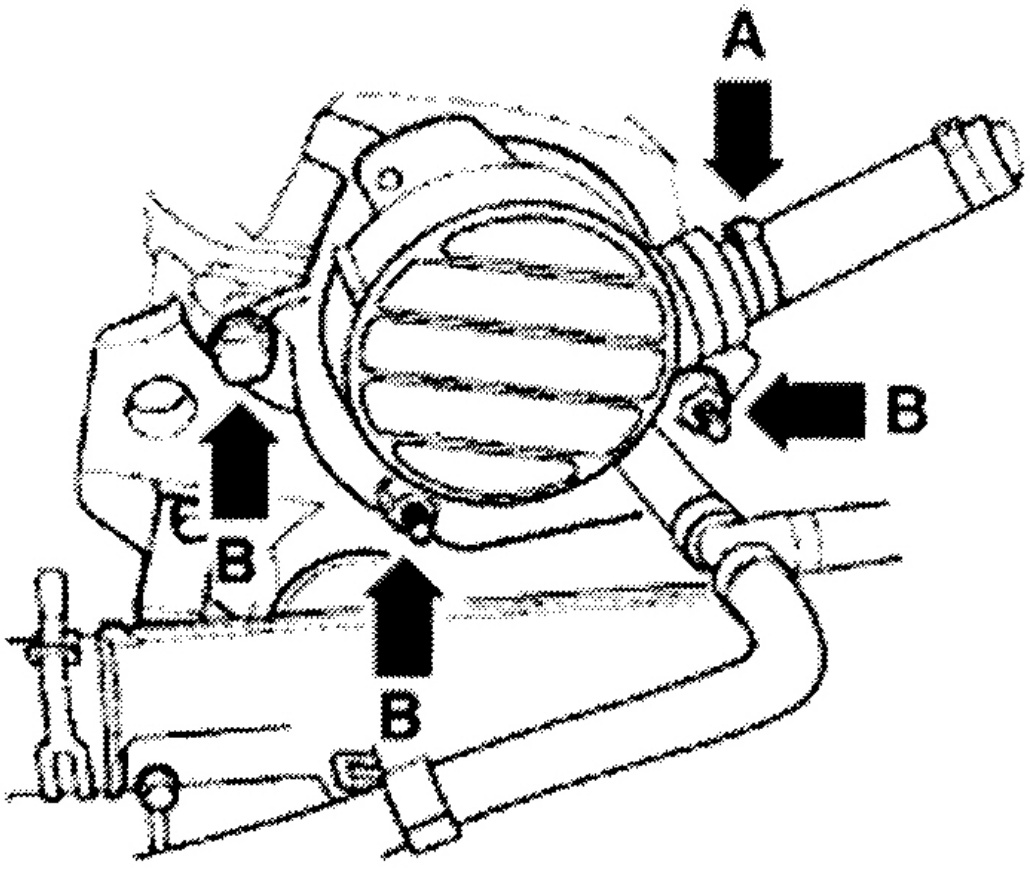


Fig. 41: Removing & Installing Vacuum Pump (Diesel Models)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

OVERHAUL

BRAKE BOOSTER

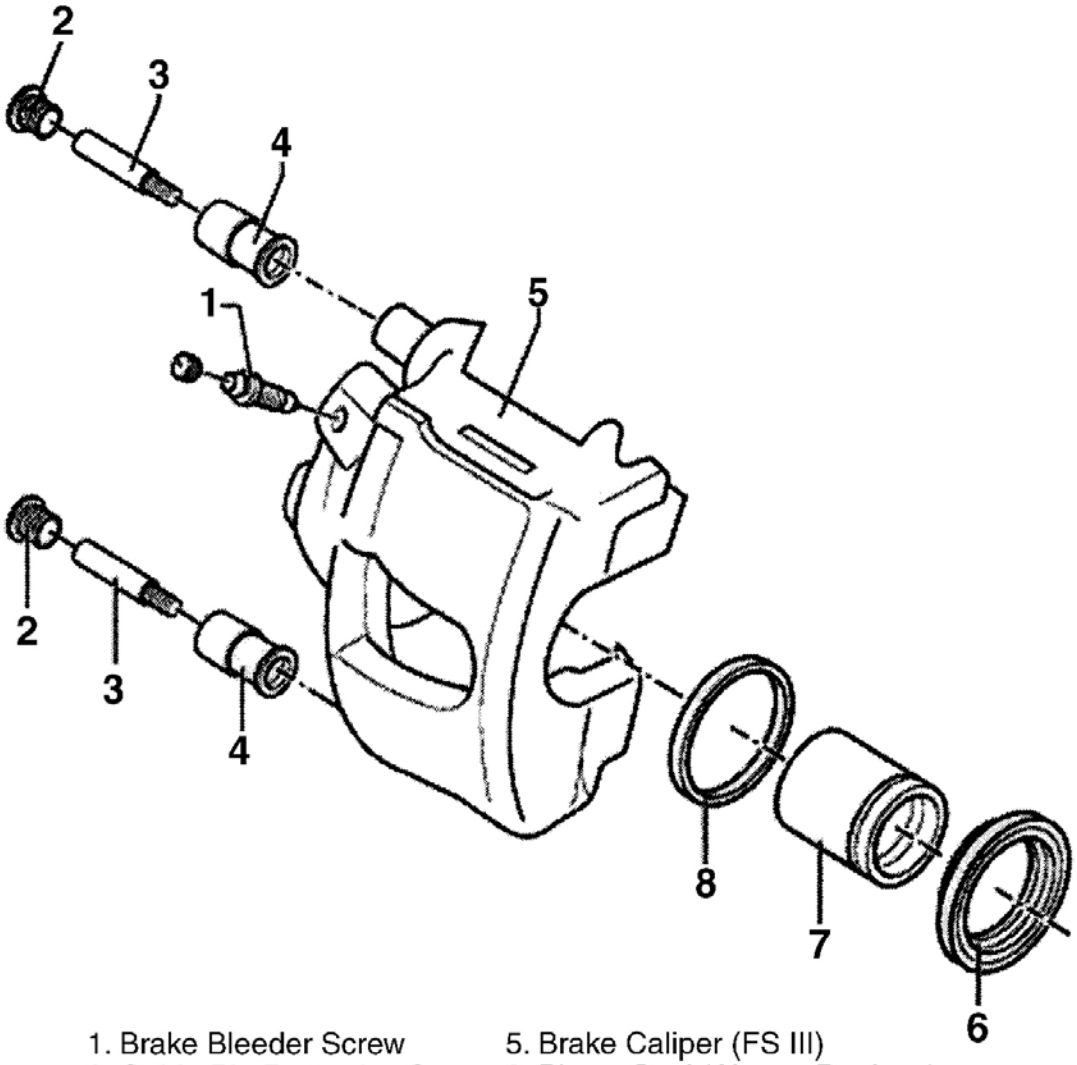
Manufacturer does not recommend overhaul of brake booster, but recommends replacement if failure occurs. See **BRAKE BOOSTER** under REMOVAL & INSTALLATION.

BRAKE CALIPER

NOTE: Black staining from piston seal wear may show on caliper bore walls and piston. This staining is normal.

Disassembly

Remove brake caliper. See **FRONT & REAR BRAKE CALIPER** under REMOVAL & INSTALLATION. Remove caliper from vehicle. Remove pads, and clean exterior surfaces. On front calipers, use a block of wood between piston and housing to prevent damage to piston. On self-adjusting rear calipers, use Special Tool (VW 3272) along with Collar (3272/1) or equivalent, to help remove piston from housing by turning knurled wheel counterclockwise. Remove dust seal. Remove piston seal without damaging bore or groove. Use following illustrations to aid in overhaul. See **Fig. 42** -**Fig. 44** .



1. Brake Bleeder Screw
2. Guide Pin Protective Cap
3. Guide Pin
4. Guide Pin Seal
5. Brake Caliper (FS III)
6. Piston Seal (Always Replace)
7. Caliper Piston
8. Seal (Always Replace)

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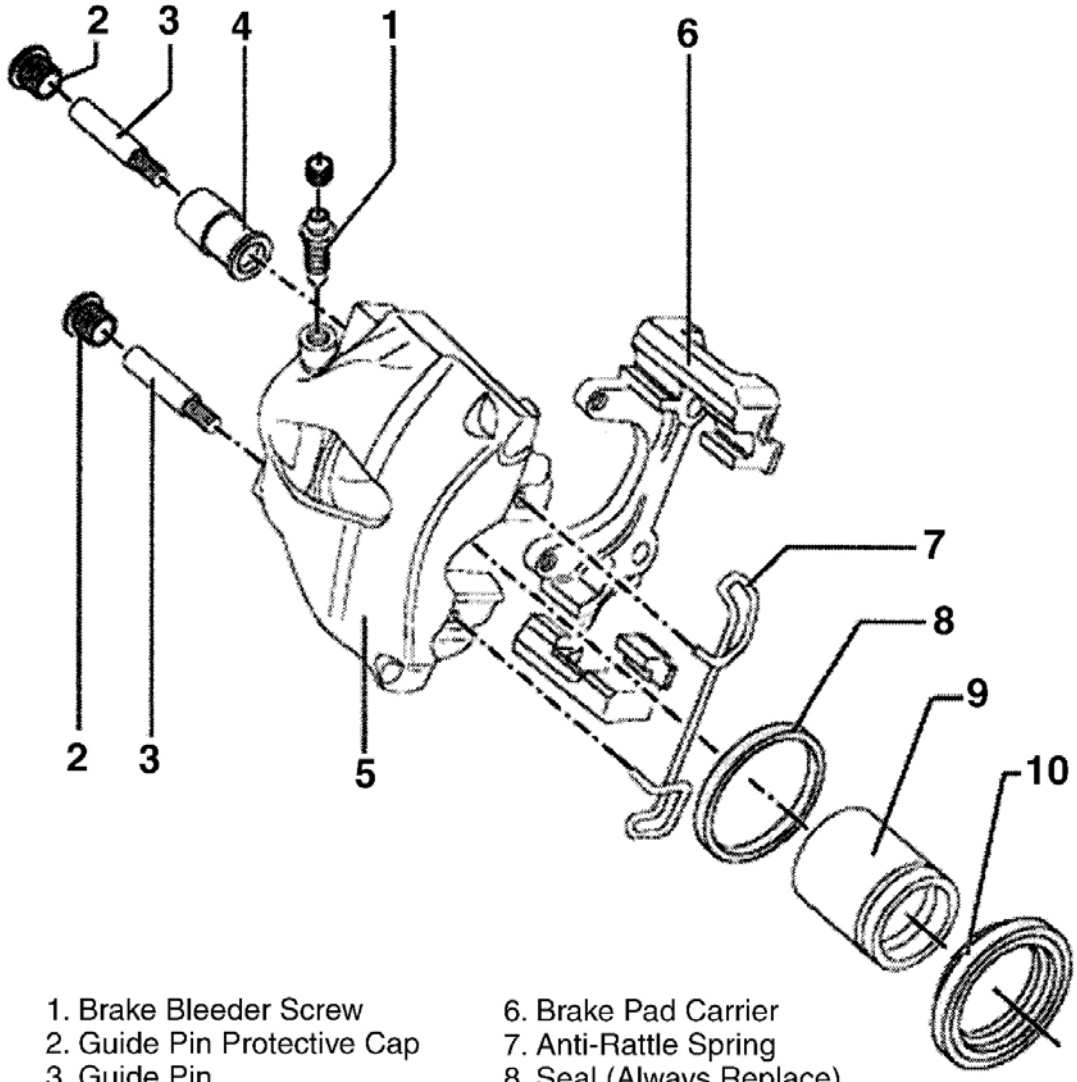
Fig. 42: Exploded View Of FS III Caliper (Front Axle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



1. Brake Bleeder Screw
2. Guide Pin Protective Cap
3. Guide Pin
4. Guide Pin Seal
5. Brake Caliper (FN3)
6. Brake Pad Carrier
7. Anti-Rattle Spring
8. Seal (Always Replace)
9. Caliper Piston
10. Piston Seal (Always Replace)

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Fig. 43: Exploded View OF FN3 Caliper (Front Axle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

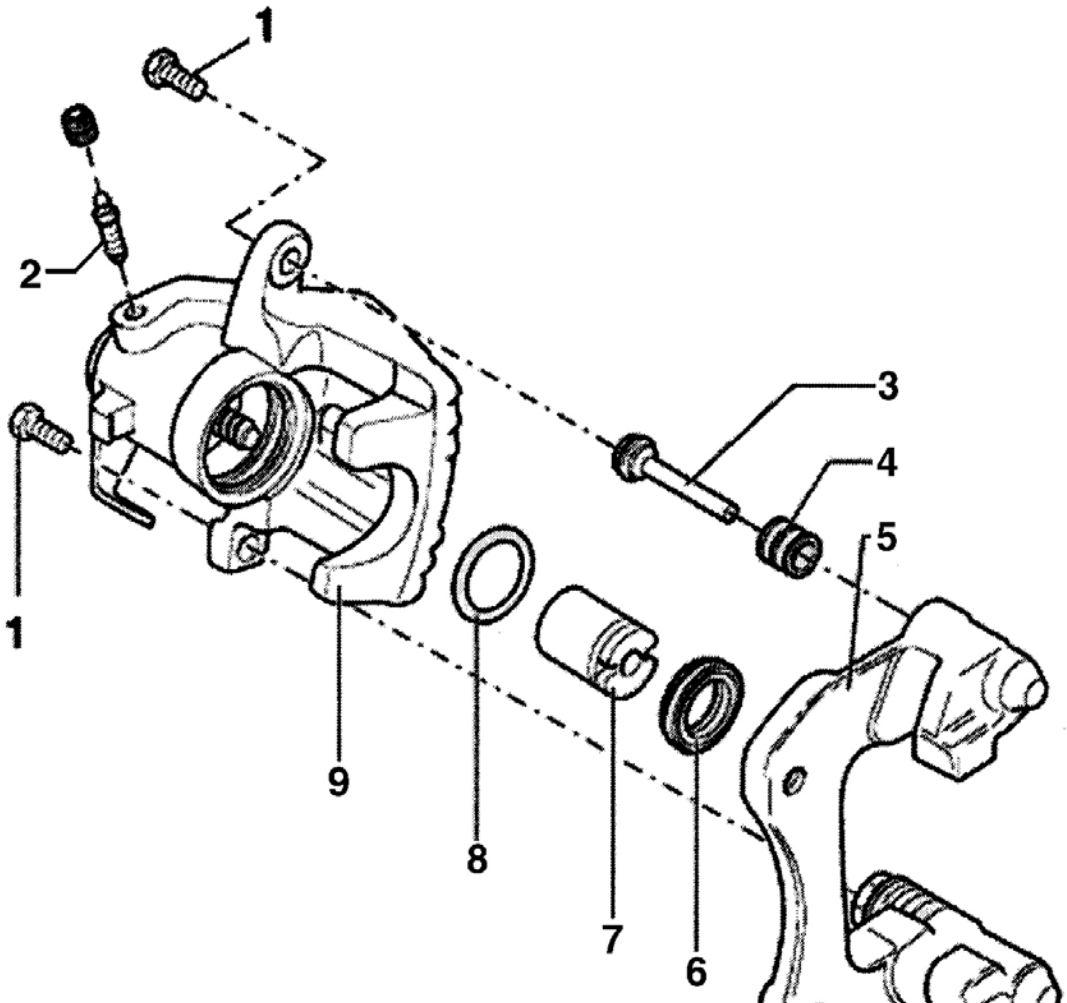

Fig. 44: Exploded View Of Self-Adjusting Rear Brake Caliper
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Cleaning & Inspection

Use alcohol or brake cleaning fluid to clean hydraulic chambers. Check cylinder bore and piston for corrosion

and damage. Replace defective parts as necessary.

Reassembly

1. Use all parts supplied in repair kit. Apply a thin coat of assembly lubricant G 052 150 A2 to piston and seal before inserting. Fit piston seal into cylinder. Slide dust seal onto piston. Slowly insert piston into bore. On self-adjusting rear calipers, use Special Tool (VW 3272) along with Collar (3272/1) or equivalent, to help screw piston into housing by turning knurled wheel clockwise. If piston is pushed back with a piston resetting tool or by operating foot brake automatic adjustment in the brake caliper is destroyed.
2. Seat inner lip of dust seal in groove on cylinder housing. Open bleed screw and push piston into bore as far as possible. Fit outer lip of dust seal into piston groove.

MASTER CYLINDER

Manufacturer does not recommend overhaul of master cylinder, but recommends replacement if failure occurs. See **MASTER CYLINDER** under REMOVAL & INSTALLATION.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Front	
FS III	
Brake Hose-To-Caliper Banjo Bolt	26 (35)
Caliper Guide Pins	21 (28)
FN 3	
Brake Hose-To-Caliper Banjo Bolt	26 (35)
Caliper Guide Pins	21 (28)
Caliper-To-Steering Knuckle Bolts	92 (125)
Rear	
C38	
Brake Hose-To-Caliper Banjo Bolt	28 (38)
Caliper-To-Carrier Self-Locking Bolts (1)	26 (35)
Caliper Carrier-To-Spindle Bolts	48 (65)
Brake Pressure Switch	18 (25)
Brake Booster-To-Bulkhead Self-Locking Nuts (1)	15 (20)
Brake Pedal Assembly Pivot Bolt & Nut	15 (20)
Brake Pressure Regulator Spring Retaining Bolts	15 (20)
Electric Vacuum Pump-To-Subframe Bolts	15 (20)
Master Cylinder Mounting Nuts (1)	15 (20)

Wheel Lug Bolt	89 (120)
(1) Always replace all self-locking bolts.	

DISC BRAKE SPECIFICATIONS

DISC BRAKE SPECIFICATIONS

Application	In. (mm)
Front	
FS III (1.9L TDI & 2.0L)	
Disc Diameter	11.02 (280)
Original Thickness	.866 (22)
Wear Limit (2)	.748 (19)
Caliper Piston Diameter	2.13 (54)
Lateral Runout & Parallelism	(1)
FN 3 (1.8L)	
Disc Diameter	11.338 (288)
Original Thickness	.984 (25)
Wear Limit (2)	.866 (22)
Caliper Piston Diameter	2.13 (54)
Lateral Runout & Parallelism	(1)
Brake Pads	
Original Thickness	.551 (14)
Wear Limit (With Pad Backing Plate)	.276 (7)
Rear	
C38 (All Engines, Solid Disc)	
Disc Diameter	9.133 (232)
Original Thickness	.354 (9)
Wear Limit (2)	.276 (7)
Caliper Piston Diameter	1.496 (38)
Lateral Runout & Parallelism	(1)
C38 (All Engines, Vented Disc)	
Disc Diameter	10.079 (256)
Original Thickness	.866 (22)
Wear Limit (2)	.787 (20)
Lateral Runout & Parallelism	(1)
Brake Pads	
Original Thickness	.472 (12)

Wear Limit (With Pad Backing Plate)	.276 (7)

(1) Information is not available from manufacturer.

(2) When worn, always replace brake discs on both sides of an axle.